

TAXONOMY AND BIOGEOGRAPHY OF ORIENTAL PRASIINI. 3. THE *FATILOQUA* AND *PARVULA* GROUPS OF THE GENUS *LEMBEJA* DISTANT, 1892 (HOMOPTERA, TIBICINIDAE)

by

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ABSTRACT

Tentative concepts for two species-groups of the genus *Lembeja* Distant, 1892, the *fatiloqua* and the *parvula* group, are presented. The widely distributed *fatiloqua* group incorporates ten species, viz., *Lembeja fatiloqua* (Stål, 1870) from Mindanao (Philippines) and North Borneo, *L. consanguinea* n.sp. from North Sulawesi, *L. maculosa* (Distant, 1883), *L. frubstorferi* Distant, 1897, *L. lieftincki* n.sp., *L. sanguinolenta* Distant, 1909, and *L. tincta* (Distant, 1909) from South Sulawesi, *L. roebli* Schmidt, 1925 from Sumba, *L. sambawensis* n.sp. from Sumbawa, and *L. paradoxa* (Karsch, 1890) from SE New Guinea, Torres Strait Islands and Cape York Peninsula. The *parvula* group is confined to Sulawesi with two species, viz., *L. parvula* n.sp. from South Sulawesi and *L. wallacei* n.sp. from North Sulawesi. Characters and character states are discussed in connection with the supposed monophyletic status of the species-groups. All species but *L. paradoxa* are (re)described and structures of taxonomic importance as well as the whole insects are depicted. A key to males and females is presented.

INTRODUCTION

In previous publications (De Jong, 1985, 1986) on the Oriental Prasiini, the genus *Prasia* Stål, 1863, and the *foliata* group of the genus *Lembeja* Distant, 1892, have been defined and the species incorporated have been (re)described. The present studies of the *fatiloqua* and *parvula* groups of the genus *Lembeja* are further contributions to a revision of the oriental Prasiini (see also De Jong & Duffels, 1981; De Jong, 1982). For a review on the history of the genus the reader is referred to De Jong (1986).

CONCEPTS OF THE *FATILOQUA* AND THE *PARVULA* GROUPS (with notes on their relationships and distribution)

Monophyly of the *fatiloqua* group

The *fatiloqua* group is characterized by a moderately to strongly developed, longitudinal medial dent in the male tergite 1, which is con-

sidered a synapomorphous character for the species of the group.

Another highly characteristic feature of the group is the capability of the males to inflate their abdomen in a probably unique manner (see Moulds, 1975). The tergites 3—6, when telescoping from under their preceding tergites, show clearly the, sometimes broad, intersegmental membranes. This feature is also displayed by the African genus *Iruana* Distant, 1905 (Boulard, 1975, 1981, 1985). This genus was formerly attributed to the Prasiini (Metcalf, 1963), but is probably more related to other genera than to those constituting the Prasiini. The telescoping abdomen most probably developed independently in the two groups.

Species attributed to the *fatiloqua* group are *L. consanguinea* n.sp., *L. fatiloqua* (Stål, 1870), *L. frubstorferi* Distant, 1897, *L. lieftincki* n.sp., *L. maculosa* (Distant, 1883), *L. paradoxa* (Karsch, 1890), *L. roebli* Schmidt, 1925, *L. sanguinolenta* Distant, 1909, *L. sambawensis* n.sp. and *L. tincta* (Distant, 1909).

Monophyly of the *parvula* group

The *parvula* group is characterized by the obliquely hindwards running edge of the pygofer between the lateral lobe and the caudodorsal beak, which is considered a synapomorphy for the species of the group.

Furthermore, the wings have five apical areas instead of the usual number of six. This character state is also displayed by an undescribed species from New Guinea, belonging to the Oriental Prasiini. Because this species is probably more related to one, or more, of the other species-groups or genera, than it is to the *parvula* group, this character state cannot be used as a strong synapomorphy for the species of the *parvula* group.

Finally, the male tergite 1 is only very slightly medially dented in the *parvula* group.

Species attributed to the *parvula* group are *L. parvula* n.sp. and *L. wallacei* n.sp.

Relationships within the species-groups

Some character states suggest that the *fatioqua* group can be divided into several sub-groups. As there is no evidence yet whether the character states involved are to be interpreted as plesio- or apomorphic, a possible subdivision of the species-group is postponed until outgroup comparison provides more information on those characters. These characters are:

Pigmentation of tegmina. — The males of five species have unspotted (sub)hyaline tegmina, viz., *Lembeja fatioqua*, *L. maculosa*, *L. roehli*, *L. sambawensis* n.sp. and *L. tincta*. The males of four species have spotted tegmina: *L. consanguinea* n.sp., *L. lieftincki* n.sp., *L. paradoxa* and *L. sanguinolenta*. The remaining species, *L. fruhstorferi*, is known only from its female holotype. The female tegmina are spotted, except in *L. fatioqua*, *L. roehli* and *L. sambawensis* n.sp.

Apical lobes of the aedeagus. — All species with spotted tegmina in the males possess an aedeagus with long, rounded apical lobes, whereas those with unspotted male tegmina have an aedeagus with short, pointed to rounded, apical lobes or without lobes. However, one undescribed species with spotted tegmina, only known from poor material, is provided with an aedeagus with short and pointed lobes.

Uncus. — The males of three species, viz., *L. consanguinea* n.sp., *L. lieftincki* n.sp. and *L. sanguinolenta*, have an uncus that is enlarged medially above the claspers.

The small-sized species of the *parvula* group are very similar to one another.

Relationships between the *fatioqua* and the *parvula* groups

The male tergite 1 is medially slightly dented near its proximal border in the *parvula* group, and moderately to strongly dented in the *fatioqua* group. On account of the more or less strongly developed medial dent the groups are tentatively regarded sister-groups.

Distribution of the *fatioqua* and *parvula* groups

The *fatioqua* group is by far the most widespread group of the genus. It is distributed from Mindanao (Philippines), North Borneo, North and South Sulawesi, Nusa Tenggara (Lesser Sunda Islands), SE New Guinea, Torres Strait Islands up to the Cape York Peninsula (North Queensland).

The *parvula* group is distributed in North and South Sulawesi.

Both groups show a distribution that seems hard to reconcile with their supposed monophyletic origins. Both the *fatioqua* group and the *parvula* group show a peculiar disjunction in Sulawesi by their restricted occurrence in the most eastern part of the Minahassa Peninsula and in the most southern part of the island; no representatives of these groups are found in Central Sulawesi. The collections made by the brothers Sarasin in Central Sulawesi at the end of the 19th century, as well as recent collecting during Operation Drake in Morowali N.P. in 1980 and by Dr J. P. & Mrs M. J. Duffels, and Mr J. van Tol in Lore-Lindu N.P. in 1985, did not provide any material belonging to these two species-groups.

L. paradoxa of the *fatioqua* group has a widely remote distribution in SE New Guinea, the Torres Strait Islands and the Cape York Peninsula of Australia; no other representatives of the group are found in New Guinea.

DEPOSITORIES

The abbreviations given below have been used in the list of material and throughout the text.

BIN	Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel
BISH	Bernice P. Bishop Museum, Honolulu
BMNH	British Museum (Natural History), London

DEI	Deutsches Entomologisches Institut, Eberswalde
FSC	Florida State Collection, Gainesville
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge
MW	Institut Zoologique, Warszawa
MZB	Museum Zoologicum Bogoriense, Bogor
NBM	Naturhistorisches Museum, Basel
NHMW	Naturhistorisches Museum, Wien
NMWC	Natural Museum Wales, Cardiff
NRS	Naturhistoriska Riksmuseet, Stockholm
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden
SMD	Staatliches Museum für Tierkunde, Dresden
SMN	Staatliches Museum für Naturkunde, Stuttgart
TMB	Természettudományi Múzeum, Budapest
USNM	United States National Museum, Smithsonian Institution, Washington
ZIM	Zoologisches Institut und Zoologisches Museum, Hamburg
ZMA	Instituut voor Taxonomische Zoölogie, Zoölogisch Museum, Amsterdam
ZSM	Zoologische Staatssammlung, München.

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TAXONOMY

A short characterization of each species-group will precede the descriptions of the species, included in the group.

All methods of investigation follow De Jong (1985, 1986). The female genitalia will be described and discussed separately in a paper dealing with the female genitalia of the oriental Prasiini.

Key to the species of the *fatiloqua* and *parvula* groups

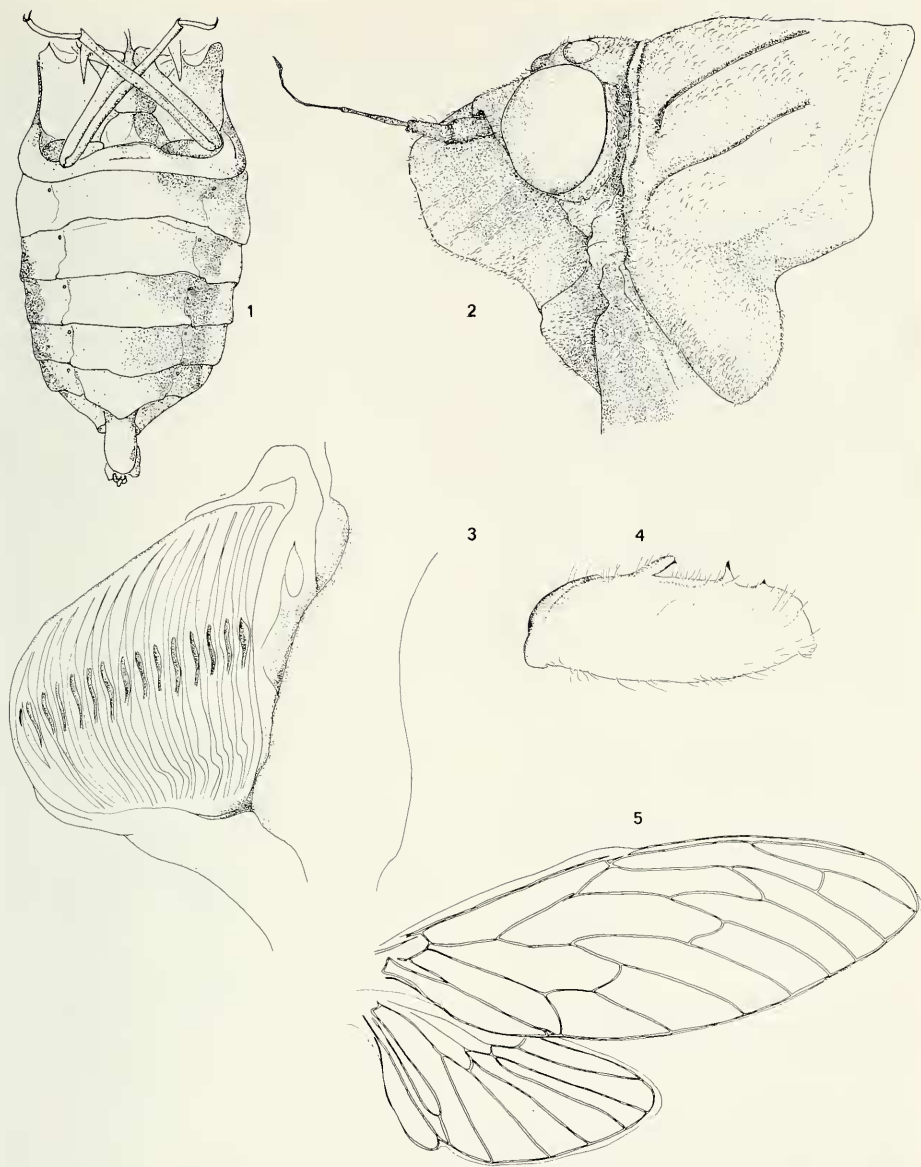
1. Wings with 6 apical areas. Medium-sized to large species (body length ♂: 17.9—21.8 mm, ♀: 14.9—24.5 mm). ♂: tergite 1 with a strong longitudinal medial dent *fatiloqua* group 2
- Wings with 5 apical areas. Small-sized species (body length ♂: 12.5—16.2 mm, ♀: 11.8—13.7 mm). ♂: tergite 1 with a weak, proximal medial dent *parvula* group 19
2. Tegmina (sub)hyaline, spotted 3
- Tegmina (sub)hyaline, unspotted, sometimes greenish or yellowish opaque 12
3. Males 4
- Females 7
4. Abdomen with large mediodorsal spines on segments 4—7. Papua New Guinea, Torres Strait islands, Cape York Peninsula *paradoxa*
- Abdomen without such large spines. Sulawesi 5
5. Body green; aedeagus provided with dorsal aedeagal appendage. North Sulawesi *consanguinea*
- Body brownish, reddish or ochreous; aedeagus without dorsal aedeagal appendage. South Sulawesi 6
6. Medium-sized species (body length: 21.4—21.6 mm); tegmina, though spotted, reasonably hyaline. Median uncus part amply

- enlarged in the shape of a tube-like structure. South Sulawesi *lieftincki*
- Large species (body length: 24.6 mm); tegmina heavily pigmented with red. Median uncus part only slightly enlarged. South Sulawesi *sanguinolenta*
7. Abdomen with three longitudinal fasciae: one distinct, dorsal medial fascia and two broad, lateral fasciae 8
- Abdomen monochromous, or with faint fasciae 9
8. Body dark ochreous; tegmen areas finely stippled; ovipositor sheath $0.4\text{--}0.41 \times$ as long as abdomen. South Sulawesi *lieftincki*
- Body virescent to orange-yellowish, with light pale ochreous; tegmen areas patchy stippled; ovipositor sheath $0.25 \times$ as long as abdomen. South Sulawesi *tincta*
9. Body and tegmina green; tegmen areas with a faint stippling. North Sulawesi *consanguinea*
- Body and tegmina variably coloured; tegmen areas with a distinct stippling 10
10. Pigmentation along tegmen veins distinct and dark-coloured. Papua New Guinea, Torres Strait Islands, Cape York Peninsula *paradoxa*
- Pigmentation along tegmen veins weak. South Sulawesi 11
11. Large species (body length: 25.9 mm); stippling in tegmen areas patchy. South Sulawesi *fruhstorferi*
- Medium-sized species (body length: 17.3—19.1 mm); stippling in tegmen areas relatively fine. South Sulawesi ... *maculosa*
12. Males 13
- Females 17
13. Tegmina hyaline 14
- Tegmina opaque; tymbal with 17—19 pairs of alternating ridges; genitalia as in figs. 18—21. Sumbawa *sumbawensis*
14. Aedeagus long and slender (figs. 6—8, 23, 26, 28) 15
- Aedeagus short and sturdy (figs. 12—14, 29—31) 16
15. Body size: 17.9—21.8 mm; tymbal with 15 pairs of alternating ridges; genitalia as in figs. 6—9. Mindanao, North Borneo *fatiloqua*
- Body size: 22.3—24.2 mm; tymbal usually with 14 pairs of alternating ridges; genitalia as in figs. 23, 25, 26, 28. South Sulawesi *maculosa*
16. Body orange-yellowish and large (body length: 22.8—26.2 mm); aedeagus with hooked apex provided with two pointed flaps. South Sulawesi *tincta*
- Body greenish-yellow and medium-sized (body length: 18.8—22.9 mm); aedeagus straight without apical flaps. Sumba *roehli*
17. Tegmina hyaline. Mindanao, North Borneo, Sumba 18
- Tegmina orange-greenish opaque. Sumbawa *sumbawensis*
18. Large species (body length: 17.9—20.9 mm); ovipositor sheath $0.22\text{--}0.26 \times$ as long as abdomen. Mindanao, North Borneo *fatiloqua*
- Small species (body length: 14.9—16.1 mm); ovipositor sheath $0.32\text{--}0.33 \times$ as long as abdomen. Sumba *roehli*
19. ♂: body ochreous; tegmen areas unspotted, veins with some markings; genitalia as in figs. 61—64, 66. ♀: body brownish-ochreous; abdomen with three longitudinal fasciae: one dorsal medial fascia and two broad lateral fasciae. South Sulawesi *parvula*
- ♂: body green; 8th apical and 4th ulnar areas of tegmen spotted; genitalia as in figs. 68—71, 73. ♀: body dark-brown, abdomen usually without fasciae. North Sulawesi *wallacei*

The material studied contained several unidentified males and females belonging to the *fatiloqua* group. Three females with pigmented tegmina, viz., two from North Sulawesi (a small one from Edwards Camp in the Dumoga-Bone N.P. (RMNH), and a large one from Gunung Muajat, east of Kotamobagu (BMNH)), and a small one from South Sulawesi (Watampone (MZB)); two females with opaque tegmina, one from Flores (SMD) and one from Sumbawa (NRS); a large female with hyaline tegmina from Sangihe island (RMNH). Furthermore, two males (representing one species) with pigmented tegmina from North Sulawesi (Labuanika (ZMA)); two males with hyaline tegmina, one of which from South Sulawesi (Assumpati (BMNH)), and one from North Sulawesi (Tonsealama (MCZ)); three males with opaque tegmina, one from Lombok (Sapit (NHMW)), and two males (representing one species) from Sumbawa (SMD; BMNH).

The *Lembeja fatiloqua* group

Head triangularly to obconically protruding in dorsal view. Antennal segment 1 long. Male



Figs. 1—5. The *L. fatiloqua* group: 1, male abdomen, ventral view, *Lembeja tincta*; 2, head and pronotum, lateral view, *L. lieftincki*; 3, left tymbal, lateral view, *L. fatiloqua*; 4, female femur, lateral view, *L. fatiloqua*; 5, right tegmen and wing, *L. fatiloqua*.

opercula small, not covering tymbal cavities. Tegmina (sub)hyaline or opaque, with or without spots along the veins and inside the tegmen cells. Abdomen in males moderately to strongly carinate along tergites 3—7. Tergites strongly folded laterally, forming a ridge on each side of the sternites. Intersegmental membranes sometimes clearly exposed. Tergite 1 bulbous, usually with two short lateroproximal flaps, and provided with a moderately to strongly developed, medial longitudinal dent. Sternite 1 triangular and small. Folded membranes and mirrors medium-sized, sometimes in an angle of 90° with one another. Tymbals with 12—20 long ridges, alternating usually with an equal number of short ridges. Abdomen in females slender, carinate dorsally; in lateral view convex from tergite 3—8. Ovipositor sheath extending beyond caudodorsal beak. Lateral lobes of pygofer usually short and concave on the outer surface. Claspers vary from short and curved to long and elongate; ventrally usually concave. Median uncus part usually slightly compressed, sometimes enlarged to a short to somewhat longer tube, just above the claspers. Aedeagus long and slender to short and more sturdy; apex rounded, or with two short to long lobes. Only one species (*L. consanguinea* n.sp.) provided with an unsclerotized, dorsal aedeagal appendage.

***Lembeja fatiloqua* (Stål, 1870)**

(figs. 6—11, 74, 75; map 1)

Prasia fatiloqua Stål, 1870: 718; Distant, 1892: xiv, 146, Pl. 6 figs. 2, 2a—b; Breddin, 1901: 153; Distant, 1905: 279; Distant, 1906: 184; Distant, 1909: 394; Kato, 1932: 184; de Jong, 1985: 166; de Jong, 1986: 141.

Lembeja fatiloqua; Horvath, 1912: 609; Myers, 1928: 392, 460; Myers, 1929: 52, text fig. 24; Metcalf, 1963: 430; de Jong, 1982: 182; de Jong, 1986: 142.

The following reference was found to relate to another species: *Prasia fatiloqua*; Lallemand, 1935: 677 (Sumba specimens belong to *Lembeja roebli* Schmidt, 1925).

The male holotype of the species has been studied at the NRS, by kind permission of Dr P. Lindskog, in order to establish the identity of the species.

Description.

Body pale ochreous, sometimes greenish; abdomen sometimes slightly darker than remaining part of body. Head and pronotum together $0.92\text{--}1.07 \times$ as long as meso- and metanotum

together. Thorax and head together in males $0.63\text{--}0.82 \times$, in females $0.88\text{--}1.08 \times$ as long as abdomen. Greatest width of body in males at the level of abdominal segment 2 and 3, in females at lateral angles of pronotum collar.

Head. — Second antennal segment slightly darker than 1st. Eye small, in dorsal view $0.49\text{--}0.57 \times$ as wide as width of vertex between eyes. Ocelli raised. Distance between lateral ocelli $1.0\text{--}1.31 \times$ distance between lateral ocellus and eye. Length of head $1.33\text{--}1.49 \times$ as long as width of vertex between eyes; width of head $1.98\text{--}2.13 \times$ as wide as width of vertex between eyes. Transverse ridges in the same colour as underside of postclypeus. Rostrum with dark apex reaching middle trochanter.

Thorax. — Unicoloured. Fissures on pronotum not prominent. Pronotum collar $1.96\text{--}2.47 \times$ as wide as length of head, $1.41\text{--}1.61 \times$ as wide as width of head head including eyes. Mesonotum sometimes slightly darker than pronotum. Paramedian obconical spots recognizable; lateral ones usually consisting of some dark coloured spots.

Legs. — Same colour as underside of body. Basal spine of fore femur blunt, provided with a small subapical spine. Middle and apical spines acutely pointed.

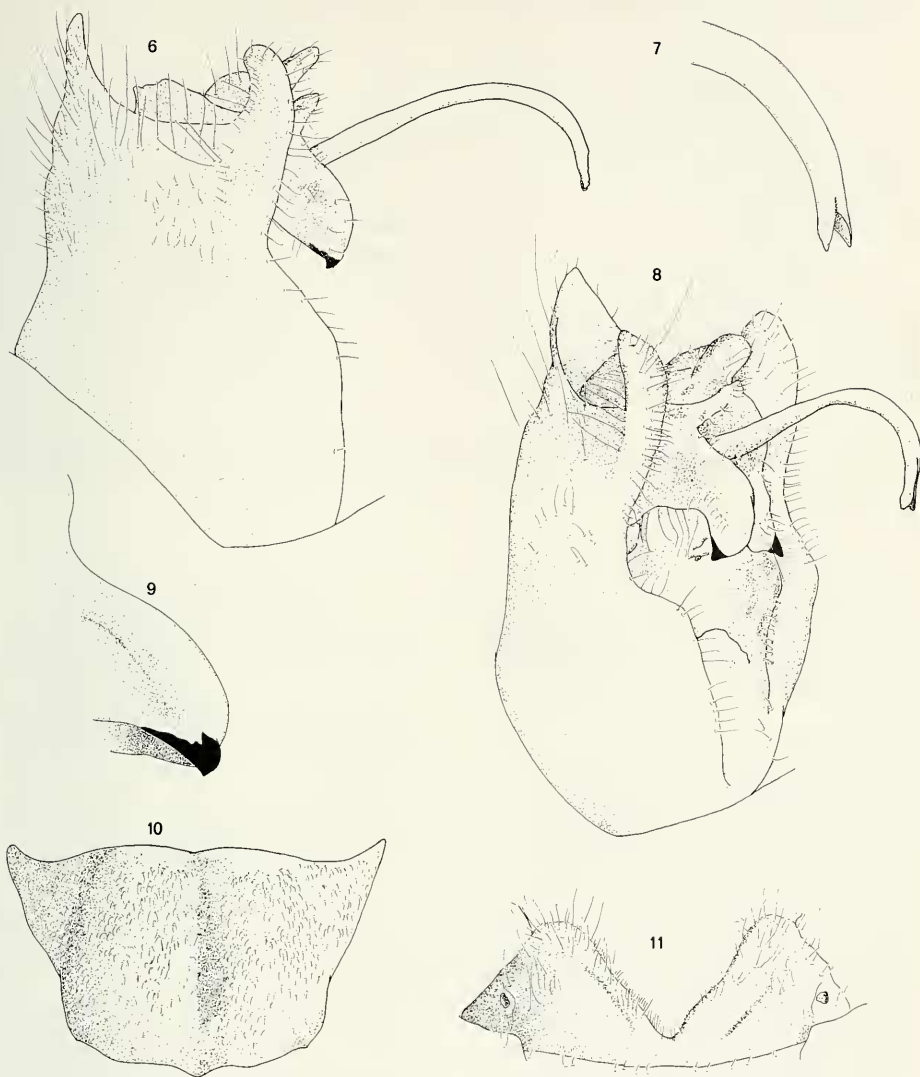
Tegmina and wings. — Tegmina and wings hyaline; venation whitish to virescent. In tegmina transverse vein of 2nd ulnar area extending into 3rd one. Corial fold recognizable. Node in M_{3+4} present. Cu_2 and A_1 forming a small triangle at tegmen border. Third ulnar area $0.99\text{--}1.15 \times$ as long as 1st one; 4th ulnar area $0.91\text{--}1.07 \times$ as long as radial area. Third apical area $0.78\text{--}0.95 \times$ as long as 4th one. Cu_2 and A_1 in wings fused at $81\text{--}98\%$ from their origin.

Male: Operculum. — Small, more or less sickle-shaped; not reaching folded membrane. Long and pointed meracanthus broad at base.

Abdomen. — Dorsally slightly carinate. Pale ochreous to sometimes dark-brown. Tergite 1 with two latero-proximal flaps. Folded membrane almost parallel with underside of thorax. Mirrors medium-sized. Triangular structure between the folded membranes fairly large.

Tymbals. — Medium-sized, provided with 15 long and 15 intercalary short ridges.

Genitalia. — Lateral lobes small, convex inner surface somewhat swollen, not reaching beyond anal valves. Caudodorsal beak short, only very slightly pointed, reaching just beyond anal valves. Sturdy claspers short, curved and pointed apically. Median uncus part narrow. Aedeagus long and



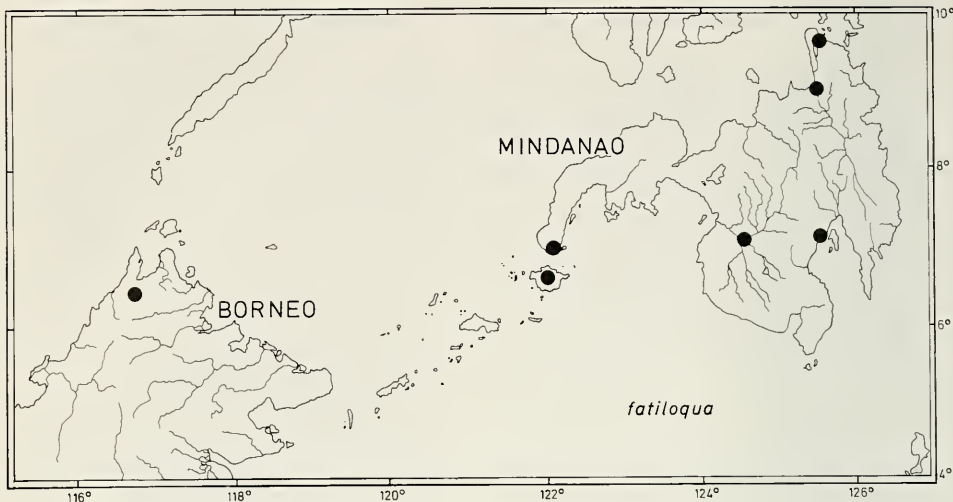
Figs. 6—11. *Lembeja fatiloqua*; 6—10, ♂; 11, ♀. 6, pygofer, lateral view, Basilan island; 7, apex of aedeagus, laterodorsal view, Basilan island; 8, pygofer, ventrolateral view, Basilan island; 9, clasper, lateral view, Basilan island; 10, tergite 1, dorsal view, Davao; 11, sternite 7, ventral view, Davao.

slender. Apex of aedeagus with two short, hardly pointed flaps in the shape of a serpent's tongue.

Female: Operculum. — Small, somewhat sickle-shaped.

Abdomen. — Unicoloured; ovipositor sheath 0.22—0.25 × as long as abdomen.

Measurements of the material studied: body length ♂: 17.9—21.8 mm, $\bar{x} = 19.7 \pm 1.2$ mm, ♀:



Map 1. Distribution of *L. fatiloqua*.

17.9—20.9 mm, $\bar{x} = 19.5 \pm 1.1$ mm; width of pronotum collar ♂: 5.0—6.1 mm, $\bar{x} = 5.6 \pm 0.3$ mm, ♀: 5.9—7.1 mm, $\bar{x} = 6.4 \pm 0.5$ mm; tegmen length ♂: 22.3—25.0 mm, $\bar{x} = 23.5 \pm 0.9$ mm, ♀: 23.7—27.8 mm, $\bar{x} = 25.8 \pm 1.7$ mm.

Distribution. — Mindanao, Island of Basilan and North Borneo (map 1).

Material examined. — Malaysia, Borneo: Kina Balu, ex. coll. Oberthur, 1 ♂ (BIN). Philippines: Basilan Isl., Baker, 2 ♂ (USNM). Mindanao: Butuan, *Prasia fatiloqua* Stål, J. G. Myers det., 1 ♂ (BMNH); Calian, Davao Prov., C. S. Clagg., 19.vi, Lembeja sp. det. J. P. Duffels, 2 ♂ (MCZ); Corabato, Taylor, 2 ♂ (USNM); Davao, Baker, 2 ♀ (USNM); same data but: Distant Coll. 1911—383, 1 ♂ (BMNH); Milbuk, S. del sur, 9—10.viii.1958, H. E. Milliron coll., 1 ♂ (BISH); same locality and collector but: 10.viii.1958, light trap, 1 ♀ (BISH); same locality and collector but: 3.2 km NW of, 4.viii.1958, light trap in jungle, 1 ♂ (BISH); Surigao, Baker, 1 ♀ (USNM); Zamboanga, Baker, 1 ♂ (USNM); without further specification, Semper, 1 ♀ (NRS). Philippines, without further specification: "Ins./Philipp." (print), "Semper" (print, italics), "Typus" (print, dark red label, black cadre), "*Prasia/fatiloqua*/Stål" (handwritten), ♂ holotype of *Prasia fatiloqua* (NRS); same data but: paratypus, 1 ♂ (NRS), J. J. Moursey, 1912—181, 730, 1 ♂ (BMNH).

Lembeja roehli Schmidt, 1925

(figs. 12—17; map 2)

Lembeja roehli Schmidt, 1925: 42, 43; Jacobi, 1941: 317; de Jong, 1982: 182, 183; de Jong, 1986: 141, 142.

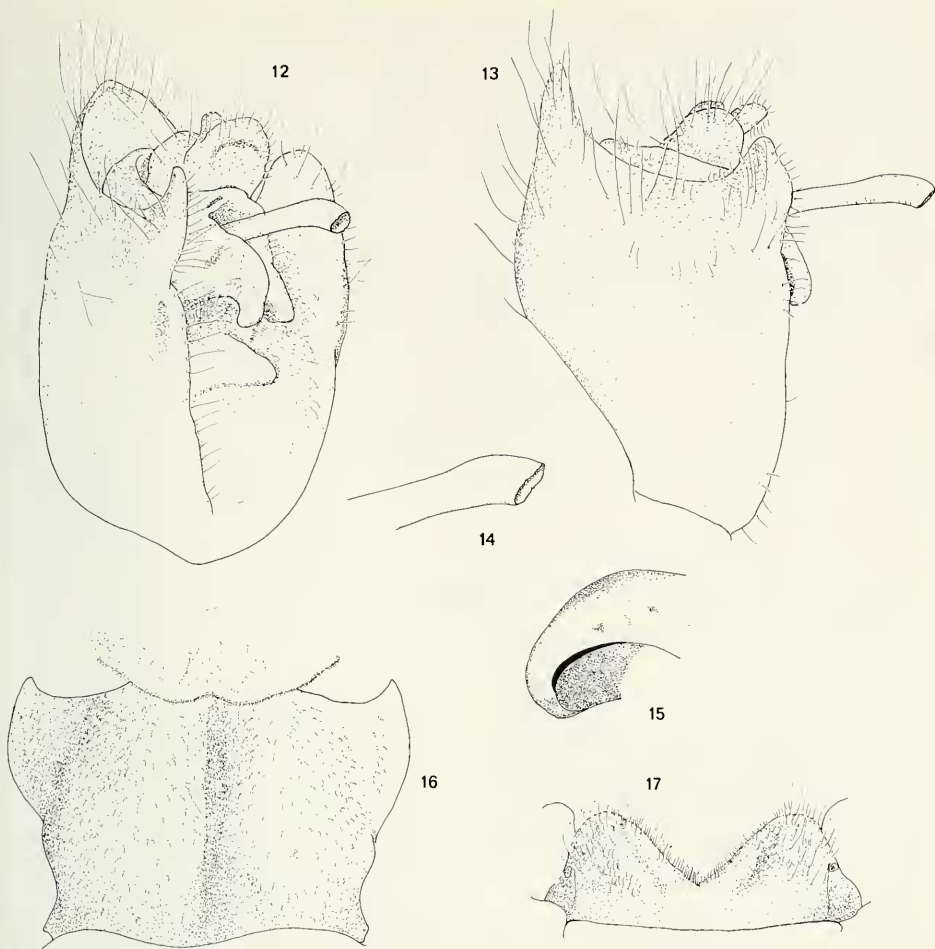
The species is described in comparison with *L. fatiloqua*.

Description.

Body size larger than in *L. fatiloqua*. Pale yellowish to greenish. Head and pronotum together 0.87—1.07 × as long as meso- and metanotum together. Thorax and head together in males (depending upon the inflation of the abdomen) 0.61—0.81 ×, in females 0.97—1.11 × as long as abdomen.

Head. — Antennae unicoloured. Eye relatively small, in dorsal view 0.39—0.48 × as wide as width of vertex between eyes. Distance between lateral ocelli 0.69—0.87 × distance between lateral ocellus and eye. Length of head 1.25—1.42 × as long as width of vertex between eyes; width of head 1.82—1.96 × as wide as width of vertex in between eyes. Rostrum with only slightly darker apex reaching coxae of middle legs.

Thorax. — Pronotum collar 1.58—1.73 × as wide as width of head including eyes, 2.14—2.5 × as wide as length of head. Mesonotum unicoloured.



Figs. 12—17. *Lembeja roebli*; 12—16, ♂; 17, ♀. 12, 13, pygofer, 12, ventrolateral view, Waingapu, 13, lateral view, Waingapu; 14, apex of aedeagus, lateral view, holotype; 15, clasper, lateral view, Waingapu; 16, tergite 1, dorsal view, Waingapu; 17, sternite 7, ventral view, Melolo.

Tegmina and wings. — Tegmina hyaline; venation yellowish to whitish. Transverse vein of 2nd ulnar area hardly extending into 3rd one. Corial fold hardly recognizable. Small node in M_{3+4} present. Third ulnar area $0.91-1.1 \times$ as long as 1st one; 4th ulnar area $0.85-1.04 \times$ as long as radial area. Third apical area $0.79-0.98 \times$ as long as 4th one. Wings hyaline. Fusion of Cu_2 and A_1 at $81-88\%$ from their origin.

Male: Operculum. — Small, round; just reaching

tolded membrane. Long and pointed meracanthus broad at base.

Abdomen. — Dorsally moderately carinate from segment 4—7. Usually pale ochreous. Tergite 1 broad. Mirrors relatively small. Abdomen, when inflated, showing clearly the intersegmental membranes; in normal position, underside curved upwards to the posterior in lateral view.

Tymbals. — Provided with 12 long and 12 short intercalary ridges.



Map 2. Distributions of *L. roehli* and *L. sumbawensis*.

Genitalia. — Lateral lobes very small; hardly swollen on convex inner surface, not reaching beyond anal valves. Caudodorsal beak much less pointed than in *L. fatiloqua*. Claspers smaller, but generally shaped as in *L. fatiloqua*; apically hardly pointed. Median uncus part narrow. Aedeagus short and sturdy. Somewhat swollen apex of aedeagus almost round.

Female: Operculum. — Small.

Abdomen. — Unicoloured; ovipositor sheath 0.32—0.33 × as long as abdomen.

Measurements of the material studied: body length ♂: 18.8—22.9 mm, $\bar{x} = 20.7 \pm 1.7$ mm, ♀: 14.9—16.1 mm; width of pronotum collar ♂: 5.3—6.1 mm, $\bar{x} = 5.6 \pm 0.3$ mm, ♀: 4.8—5.3 mm; tegmen length ♂: 24.1—25.3 mm, $\bar{x} = 24.7 \pm 0.5$ mm, ♀: 20.6—22.0 mm.

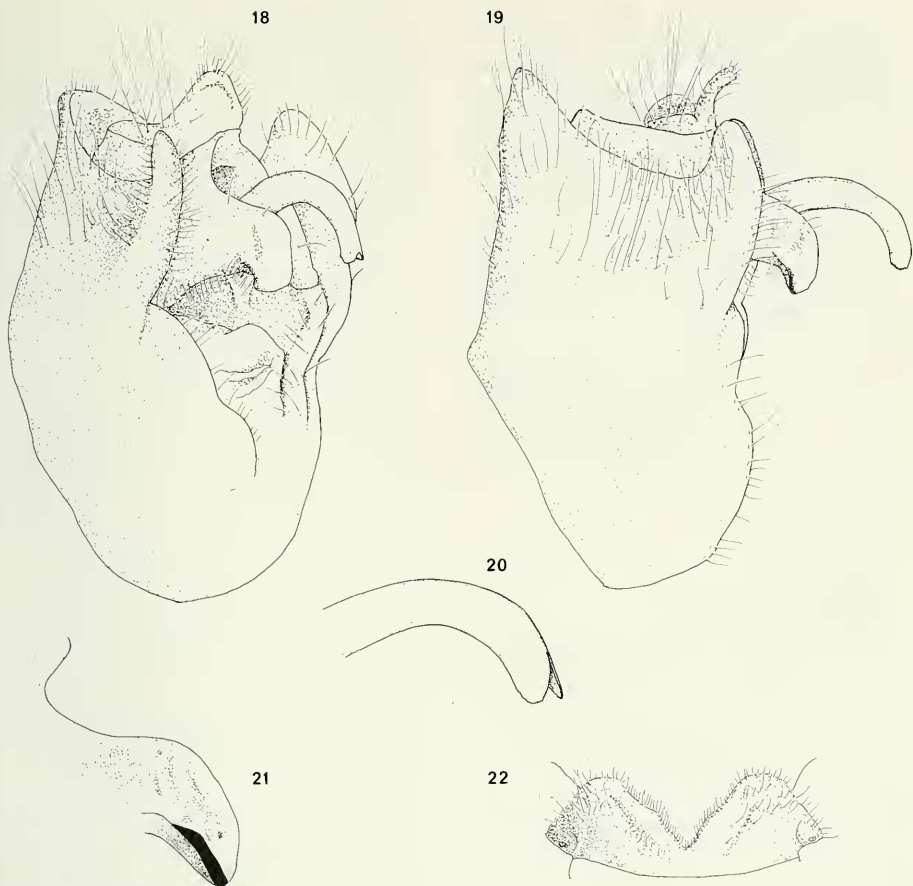
Distribution. — Sumba island (map 2).

Material examined. — Indonesia, Sumba: Grelak, "Sumba/Grelak" (print, black cadre), "Typus" (print, red label, black cadre), "*Lembeja*/Roehli Schmidt/Edm. Schmidt/♂. determ. 1925" (partly print, partly handwritten) ♂ holotype of

Lembeja roehli (MW); Kananggar, 700 m, E. Soemba, v.1925, Dammermann, 1 ♂ (MZB); Laluku, E. Sumba, 4.vii, Dr Bühler & Dr Sutter, *Baeturia exhausta* Guérin, det. V. Lallemand 1951, 1 ♂ (NBM); Laora, 100 m, N.W. Sumba, iv.1925, Dammermann, 3 ♂ (MZB); Melolo, E. Sumba, 29.v.1949, Dr Bühler & Dr Sutter, *Muda obtusa* Walk., det. H. Synave 1951, 1 ♀ (NBM); Prai Jawang, E. Sumba, Rende Wai, 12.vi.1949, Dr Bühler & Dr Sutter, *Baeturia exhausta* Guérin, 1 ♀ (RMNH); Waingapu, i.1932, *Prasia fatiloqua* Stål, *Lembeja fatiloqua* Stål, 1 ♂ (NBM). Specimen without labels: 1 ♂ (ZBM).

Remarks.

The taxonomic position of *L. roehli* within the species-group is unclear. Though the species is much like *L. fatiloqua*, because of the coloration of the tegmina, some features suggest a close affinity to *L. paradoxa*, viz. the telescoping of the abdomen in the males, and the low number of ridges on the tymbal organ. The male genitalia, however, resemble those of *L. sumbawensis* n.sp., and, to a certain extent, those of *L. tincta*.



Figs. 18—22. *Lembeja sumbawensis*; 18—21, holotype; 22, ♀ paratype. 18, 19, pygofer, 18, ventrolateral view, 19, lateral view; 20, apex of aedeagus, lateral view; 21, clasper, lateral view; 22, sternite 7, ventral view.

***Lembeja sumbawensis* n.sp.**
(figs. 18—22, map 2)

The description is made in comparison with *L. fatiloqua*.

Description.

Body green to ochreous. Head and pronotum together $0.94\text{--}1.07\times$ as long as meso- and metanotum together. Head and thorax together in males $0.76\text{--}0.79\times$, in females $1.03\times$ as long as abdomen.

Head. — Antennae unicoloured. Eye in dorsal view $0.46\text{--}0.56\times$ as wide as width of vertex in

between eyes. Distance between lateral ocelli $0.78\text{--}1.29\times$ distance between lateral ocellus and eye. Length of head $1.24\text{--}1.41\times$ as long as width of vertex between eyes; width of head $1.92\text{--}2.11\times$ as wide as width of vertex between eyes. Rostrum with slightly darker apex.

Thorax. — Unicoloured. Fissures on pronotum somewhat deeper than in *L. fatiloqua*. Pronotum collar $2.34\text{--}2.89\times$ as wide as length of head, $1.57\text{--}1.65\times$ as wide as width of head. Obconical areas on mesonotum not discernable.

Legs. — Same colour as underside of body. Basal, pointed spine on fore femora relatively shorter than in *L. fatiloqua*; very broad at base.

Tegmina and wings. — Tegmina opaque, greenish to ochreous. Venation whitish to greenish. Transverse vein of 2nd ulnar area extending only shortly into 3rd ulnar area. Corial fold not recognizable. Third ulnar area $0.88-1.03 \times$ as long as 1st one; 4th ulnar area $0.83-1.0 \times$ as long as radial area. Third apical area $0.83-0.9 \times$ as long as 4th one. Wings subhyaline, fusion of Cu_2 and A_1 at 75–85% from their origins.

Male: Operculum. — Small, as in *L. fatiloqua*. Meracanthus long and pointed.

Abdomen. — On the whole as in *L. fatiloqua*, but somewhat more carinate. Lateral flaps of tergite 1 less pointed.

Tymbal. — Provided with 17–19 long ridges, alternating with an equal number of short ridges.

Genitalia. — Lateral lobes very small, not extending beyond anal valves. Caudodorsal beak short and rounded. Claspers relatively small, hardly pointed. Aedeagus short and sturdy, slightly incised at apex.

Female: Operculum. — Very small, as in *L. fatiloqua*.

Abdomen. — Unicoloured; ovipositor sheath $0.22 \times$ as long as abdomen.

Measurements of the types: body length ♂: 17.9–19.5 mm, ♀: 14.9 mm; width of pronotum collar ♂: 5.4–6.0 mm, ♀: 5.3 mm; tegmen length ♂: 22.8–23.0 mm, ♀: 22.7 mm.

Distribution. — Sumbawa island (map 2).

Types. — Indonesia, Sulawesi: Holotype: "Soembawa/Coll. Noualhier 1898" (print), "Distant Coll./1911–383" (print) 1 ♂ holotype of *Lembeja sumbawensis* (BMNH). Paratypes: Sumbawa, Tambora, W. Doherty 1903–31, 1 ♂ (BMNH). Sumbawa, without precise locality: ex coll. Fruhstorfer 1 ♂ (NHMW); same data but: *Lembeja foliata* (Walk) Jacobi det., coll. Breddin 1 ♂ (DEI); collectio Haglund, 266–84, 1 ♀ (NRS).

Etymology. — The species is named after Sumbawa island.

Remarks.

The species resembles, as far as its genitalia are concerned, *L. roebli* very much. Three other related species with opaque tegmina are recognized in material from the Lesser Sunda Islands, but description of these three species has not been undertaken, because the material is too poor.

Lembeja maculosa (Distant, 1883)

(figs. 23–28; map 3)

Perissoneura maculosa Distant, 1883: 190, pl. 25, figs.

3, 3a–b; Karsch, 1890: 190; Mac-Lachlan, 1891: 320; Jacobi, 1903: 13.

Lembeja maculosa; Distant, 1892: xiv, 147 (in partim); Distant, 1897: 371; Jacobi, 1903: 12, 13; Distant, 1905: 279; Distant, 1906: 184; Kato, 1932: 189; Metcalf, 1963: 428, 431; De Jong, 1986: 141, 142.

Prasia maculosa; Breddin, 1901: 27, 113, 153.

The following reference was found to pertain to *L. distanti* de Jong, 1986: Distant, 1892: xiv: 147 (in partim), pl. 7, 13a–b.

This species is described in comparison with *L. fatiloqua*. The males and females of *L. maculosa* are differently coloured.

Description.

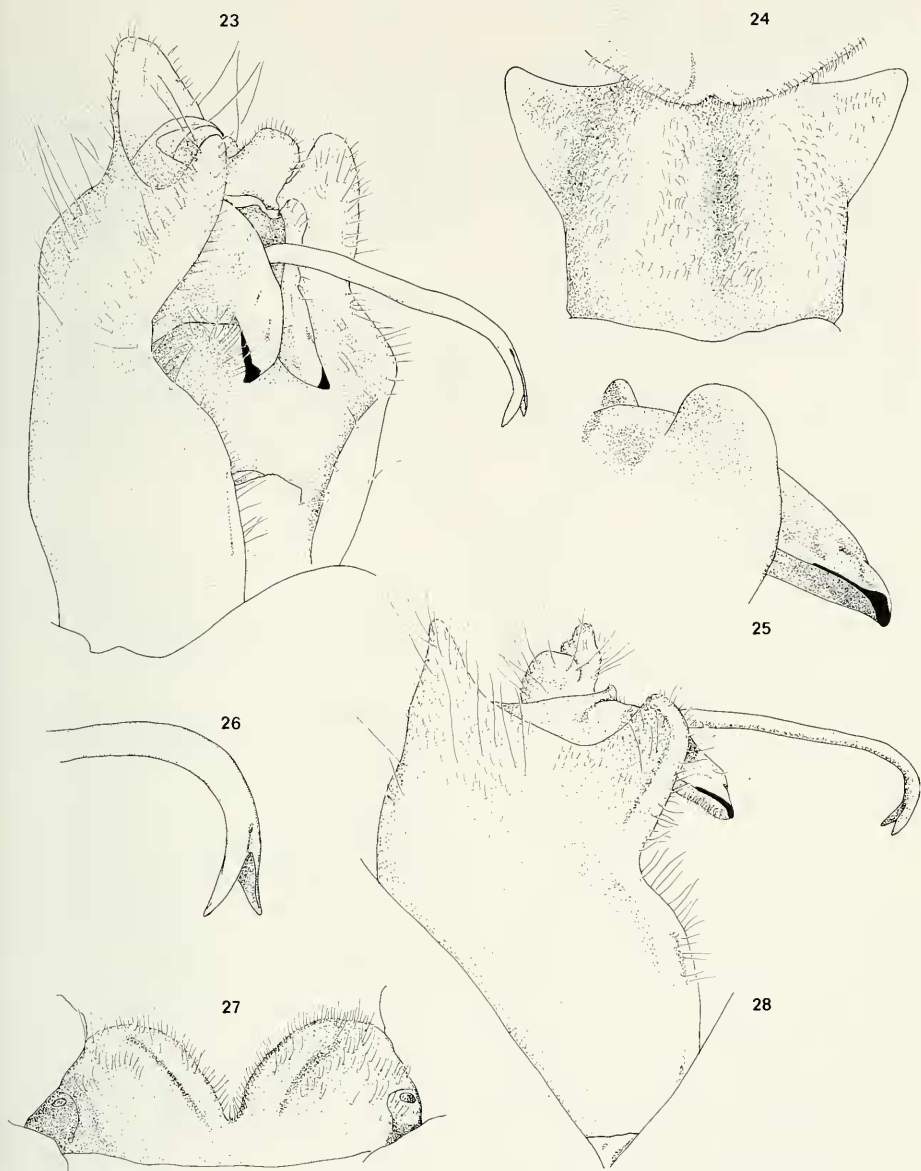
Body greenish- to yellowish-ochraceous in males, brownish-ochreous in females (holotype green). Males larger than in *L. fatiloqua*. Females with spotted tegmina, tegmina in males hyaline. Head and pronotum together $0.9-1.08 \times$ as long as meso- and metanotum together. Head and thorax together in males $0.64-0.76 \times$, in females $1.01-1.21 \times$ as long as abdomen.

Head. — Antennae unicoloured. Eye in dorsal view $0.47-0.55 \times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.72-1.0 \times$ distance between ocellus and eye. Length of head $1.28-1.44 \times$ as long as width of vertex between eyes; width of head $1.84-2.1 \times$ as wide as width of vertex between eyes. Dark apex of rostrum reaching middle coxae.

Thorax. — Fissures on pronotum not very deep. Pronotum collar $2.17-2.57 \times$ as wide as length of head, $1.5-1.73 \times$ as wide as width of head. Females with some dark brown patches on areas between fissures and between fissures and pronotum collar; central fascia slightly darker coloured than remaining part of pronotum. Obconical areas on mesonotum hardly discernable. Female with median longitudinal dark brown stripe on cruciform elevation.

Legs. — In males with same colour as under-side body; in females with darker patches. Basal spine on fore femora long and pointed. Sometimes a small 4th, apically situated spine present.

Tegmina and wings. — Tegmina hyaline in males, in females spotted regularly along and in veins and faintly spotted within tegmen cells. Transverse vein of 2nd ulnar area extending into 3rd ulnar area. Corial fold clearly distinct. Costa and veins whitish tinged in males, pale-ochreous in females. Third ulnar area $0.88-1.08 \times$ as long as 1st one; 4th ulnar area $0.91-1.16 \times$ as long as radial area. Third apical area $0.8-1.01 \times$ as



Figs. 23—28. *Lembeja maculosa*; 23—26, 28, ♂ Patunuang; 27, ♀ Patunuang. 23, pygofer, ventrolateral view; 24, tergite 1, dorsal view; 25, clasper, lateral view; 26, apex of aedeagus, laterodorsal view; 27, sternite 7, ventral view; 28, pygofer, lateral view.

long as 4th one. Wings hyaline, extreme base and veins whitish in males, red in females. Cu_2 and A_1 fused at 70–89% from their origins.

Male: Operculum. — Small, hardly reaching folded membrane. Meracanthus long and slender.

Abdomen. — Yellow to light brown; carinate. In lateral view relatively larger than in *L. fatiloqua*. Mirrors relatively smaller than in *L. fatiloqua*. Tergite 1 with relatively broader flaps.

Tymbals. — Provided with usually 14 (sometimes 15) long ridges with an equal number of short ridges.

Genitalia. — Lateral lobes of pygofer broad, short and flat, concave on outer and convex on inner surface. Caudodorsal beak short, bluntly rounded. Claspers elongate, hardly curved and only slightly pointed. Median uncus part compressed and narrow. Aedeagus long and slender, its two apical short lobes acutely pointed.

Female: Operculum. — As in *L. fatiloqua*.

Abdomen. — Darker coloured than remaining part of body. Three, usually faint, longitudinal fasciae, a dorsal, medial narrow one and two broad lateral ones. Segment 9 with two fairly broad longitudinal, dark coloured lateral stripes, just uniting in front of caudodorsal beak. Ovipositor sheath $0.19\text{--}0.24 \times$ as long as abdomen.

Measurements of the material studied: body length ♂: $22.3\text{--}24.2$ mm, $\bar{x} = 23.2 \pm 0.8$ mm; ♀: $17.3\text{--}19.1$ mm, $\bar{x} = 18.4 \pm 0.6$ mm; width of pronotum collar ♂: $5.4\text{--}6.7$ mm, $\bar{x} = 6.3 \pm 0.4$ mm, ♀: $6.1\text{--}6.7$ mm, $\bar{x} = 6.4 \pm 0.4$ mm; tegmen length ♂: $24.9\text{--}27.9$ mm, $\bar{x} = 26.6 \pm 0.8$ mm; ♀: $25.2\text{--}28.5$ mm, $\bar{x} = 26.7 \pm 1.0$ mm.

Distribution. — South Sulawesi (map 3).

Material examined. — Indonesia, Sulawesi: Makassar (= Ujung Pandang), leg. Dres. Sarasin, coll. Breddin, 1 ♂ (DEI); same locality and collectors but: *Lembeja fatiloqua* (Stål), Jacobi det., 1 ♀ (DEI); same locality and collectors but: *fatiloqua* Stål, coll. A. Jacobi 1910–6, 1 ♂ (SMD); same locality but: F. Muir, Dec. 1908, 1 ♀ (BISH); Patunuang, S. Celebes, Jan. 1896, H. Fruhstorfer, 4 ♂ 3 ♀ (NHMW); same data but: 1909–21, Type, 1 ♀ (BMNH); same data but: *maculosa* Dist., Type, Distant coll. 1911–383, 1 ♀ (BMNH); same data but: coll. A. Jacobi, 1910–6, 1 ♂ (SMD); same data but: *Lembeja maculosa* Dist. ♀, 1 ♀ (TMB); same data but: *Prasia faticina* Dist. Cotypus!, *tincta* Dist. coll. A. Jacobi 1910–6, 1 ♂ (SMD); same data but: *Prasia* sp., Dist. coll. 1911–383, 7, 1 ♂ (BMNH); same data but: *Cystosoma*, *C. paradoxa* S. Celebes, Fruhst.

1900, 12029, 1 ♀ (SMN); same data but: *L. tincta* Dist. Prof. Dr A. Jacobi determ., H. Fruhstorfer vend. 30.ix.1897, 1 ♂ (ZIM); Samanga, S. Celebes, Nov. 1895, H. Fruhstorfer, *Lembeja maculosa* Dist. ♀, 1 ♀ (SMD). Sulawesi, without further indication: "*maculosa*/Dist./type" (handwritten), "*maculosa*/(Dist)" (yellow label, handwritten), "A.B. Meyer/Celebes 1871" (print, yellow label), "coll. A. Jacobi" (print), "363" (handwritten) ♀ holotype of *Perisoneura maculosa* (SMD).

Remarks.

L. maculosa is very similar to *L. fatiloqua* in respect to the male genitalia. Furthermore, the tymbal in both species is provided with almost the same number of alternating ridges. A feature of distinction is the sexual dimorphism in coloration of body and tegmina of *L. maculosa*, which is also found in *L. tincta*.

Lembeja tincta (Distant, 1909) n. comb.

(figs. 29–34, 76, 77; map 3)

Prasia tincta Distant, 1909: 393; Gaedike, 1971: 319; de Jong, 1982: 182; Duffels & v. d. Laan, 1985: 313; de Jong, 1985: 166; de Jong, 1986: 141.
Lembeja tincta; de Jong, 1986: 142.

This species is described in comparison with *L. maculosa*. The different coloration of males and females reminds that of *L. maculosa*.

Description.

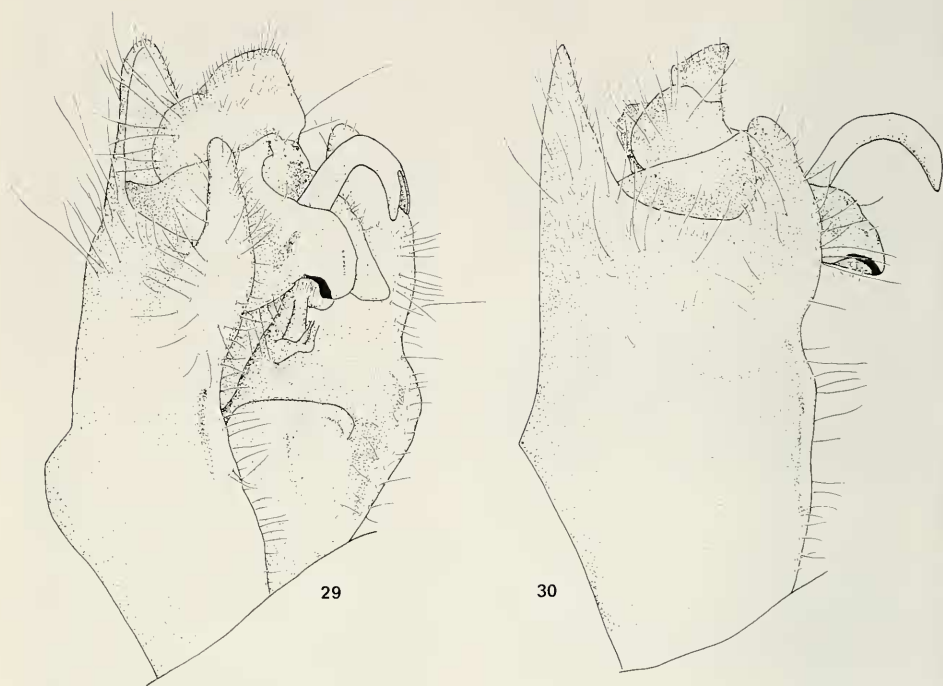
Body virescent to orange-yellowish in males, brownish-ochreous to orange-yellowish in female. Tegmina unspotted in males, spotted in female. Head and pronotum together $0.86\text{--}1.06 \times$ as long as meso- and metanotum together. Head and thorax together in males $0.61\text{--}0.79 \times$, in female $0.9 \times$ as long as abdomen.

Head. — Antennae dark-coloured from 2nd segment to apex. Eye large, in dorsal view $0.54\text{--}0.64 \times$ as wide as width of vertex between eyes. Area between lateral ocelli brownish in female only. Distance between lateral ocelli $0.74\text{--}1.0 \times$ distance between lateral ocellus and eye. Length of head $1.26\text{--}1.43 \times$ as long as width of vertex between eyes; width of head $2.09\text{--}2.27 \times$ as wide as width of vertex between eyes. Transverse ridges in the ground-colour in male, somewhat darker than ground-colour, especially near base of rostrum, in female. Rostrum with black apex reaching middle trochanter.

Thorax. — Pronotum collar $2.47\text{--}2.84 \times$ as



Map. 3. Distributions of *L. consanguinea*, *L. fruhstorferi*, *L. lieftincki*, *L. maculosa*, *L. sanguinolenta*, *L. tincta*, *L. parvula* and *L. wallacei*.



Figs. 29—30. *Lembeja tincta*, ♂ Lompobatang. 29, 30, pygofer, 29, ventrolateral view, 30, lateral view.

wide as length of head, $1.50\text{--}1.76\times$ as wide as width of head. Pronotum with fissures more prominent than in *L. maculosa*; uniformly virescent or orange-yellowish in males; dark brown spots between fissures and between fissures and pronotum collar, and dark-coloured central fascia and lateral corners of pronotum collar in female. Mesonotum with four light-coloured obconical areas in males; obconical areas in female indicated by a whitish edge, and darker coloured in front of cruciform elevation. Cruciform elevation in female with dark median longitudinal stripe, extending on metanotum.

Legs. — Same colour as underside of body in males; in females with dark patches, basally and apically, on tibiae and tarsi. Relatively slender basal spine usually blunt, sometimes with small subapical spine.

Tegmina and wings. — Tegmina hyaline, with a virescent tinge, especially in basal half, in males. Tegmina in female regularly spotted along and in veins, and more heavily spotted than inside tegmen cells of *L. maculosa*, extreme base

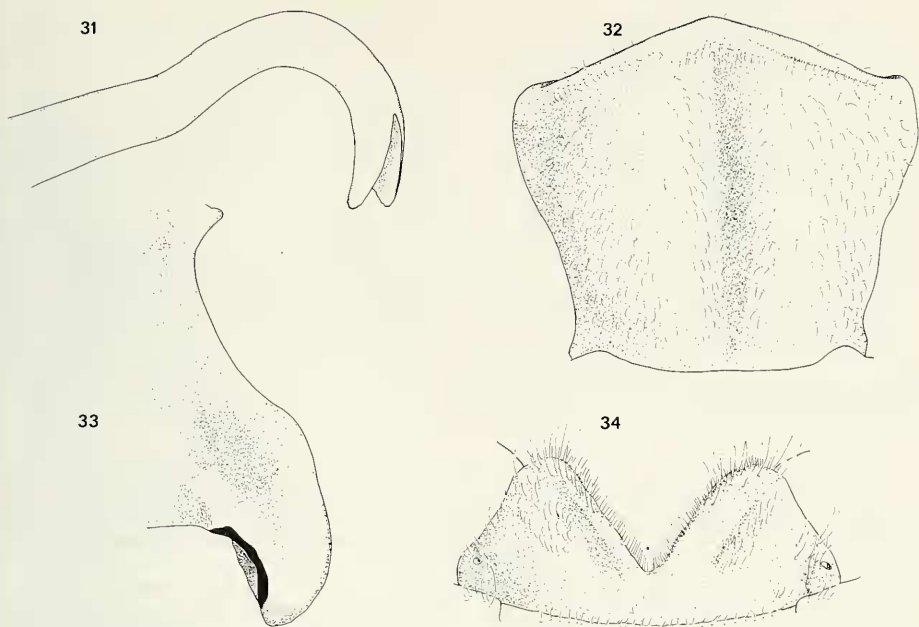
and postcostal area vermillion-red, remainder of rudimentary vein indicated by two large red patches, one in the 3rd and one in the 4th ulnar area. Third ulnar area $0.84\text{--}1.06\times$ as long as 1st one; 4th ulnar area $0.78\text{--}0.93\times$ as long as radial area. Third apical area $0.74\text{--}0.89\times$ as long as 4th one. Wings hyaline, extreme base whitish in males, vermillion-red in female. Fusion of Cu_2 and A_1 at $67\text{--}86\%$ from their origins.

Male: Operculum. — Very small, slightly sickle-shaped, hardly reaching folded membrane. Meracanthus long and slender.

Abdomen. — Virescent to orange-yellowish, carinate. Hind edges of tergites 3—6 vermillion-red. Trapezoid tergite 1 large; longitudinal medial dent not as prominent as in *L. maculosa*. Lateroproximal flaps hardly present. Folded membranes almost parallel with underside of thorax. Mirrors small.

Tymbals. — Seventeen (sometimes 18) long ridges, alternating with an equal number of short intercalary ridges.

Genitalia. — Lateral lobes of pygofer slender,



Figs. 31—34. *Lembeja tincta*, 31—33, ♂; 34, ♀. 31, apex of aedeagus, laterodorsal view, Bua Kraeng; 32, tergite 1, dorsal view, Lompobatang; 33, clasper, lateral view, Bua Kraeng; 34, sternite 7, ventral view, Bua Kraeng.

slightly swollen; not reaching beyond anal valves; hardly concave at the outer and convex on inner surface. Caudodorsal beak medium-sized, almost pointed. Claspers short, sturdy and curved. Aedeagus medium-sized, subapically strongly curved; apex with two short pointed flaps.

Female: Operculum. — Small, darker; edges sometimes lighter. Meracanthus long and slender.

Abdomen. — Three dark-coloured longitudinal fasciae situated as in *L. maculosa*, but more conspicuous. Coloration of segment 9 more conspicuous than in *L. maculosa*. Ovipositor sheath, with dark apex, $0.25 \times$ as long as abdomen.

Measurements of the material studied: body length ♂: 22.8—26.2 mm, $\bar{x} = 24.7 \pm 0.9$ mm, ♀: 23.2 mm; width of pronotum collar ♂: 6.7—7.7 mm, $\bar{x} = 7.2 \pm 0.3$ mm, ♀: 7.1 mm; tegmen length ♂: 32.5—34.3 mm, $\bar{x} = 33.6 \pm 0.6$ mm, ♀: 33.7 mm.

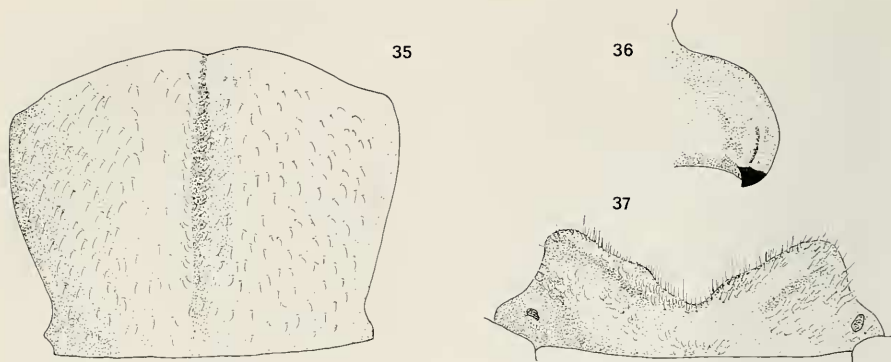
Distribution. — South Sulawesi (map 3).

Material examined. — Indonesia, Sulawesi: "S. Celebes/Bua-Kraeng/5000' Febr. 1896/H.

Fruhstorfer" (print, black cadre), "1909—21" (print), "Type" (print, round label, red edged), "syn-type" (print, round label, blue edged), "*Prasia/tincta*/Dist./Type" (handwritten), "Brit. Mus." (print) ♂ holotype of *Prasia tincta* (BMNH); same locality and collector but: syntype, *Prasia tincta*, 2 ♂ paratypes of *Prasia tincta* (BMNH); same locality and collector, 1 ♂ 1 ♀ (BMNH) 1 ♂ (NHMW); same locality and collector but: syntypus, *Lembeja tincta* (Dist) Jacobi det., 1 ♂ (DEI); same locality and collector but: *Lembeja fruhstorferi* Dist., 1 ♂ (TMB); Lompobatang (= Lompobatang), 3000' Marz 1896, H. Fruhstorfer, vend. 30.ix.1897, Prof. Dr A. Jacobi determ., 1 ♂ (ZIM); same locality, 1600 m, vii.1936, L. J. Toxopeus, 5 ♂ (MZB).

Remarks.

L. tincta and *L. maculosa* are characterized by sexual dimorphism in the coloration of body and tegmina. The genitalia of *L. tincta* and especially the sturdy aedeagus, are more alike those found in the species of the Lesser Sunda Islands.



Figs. 35—37. *Lembeja paradoxa*; 35, 36, ♂ Port Moresby; 37, ♀ Port Moresby. 35, tergite 1, dorsal view; 36, clasper, lateral view; 37, sternite 7, ventral view.

***Lembeja paradoxa* (Karsch, 1890)**
(figs. 35—37)

Perissoneura paradoxa Karsch, 1890: 191; Mac-Lachlan, 1891: 320.

Lembeja paradoxa; Distant, 1892: xiv, 148; Distant, 1897b: 382; Jacobi, 1903: 13; Distant, 1906: 182; Schmidt, 1925: 43; Kato, 1932: 189; Metcalf, 1963: 432; de Jong, 1982: 175—179, 182—184, figs. 1—8, 17—19, 22—23; de Jong, 1986: 141, 142.

Prasia paradoxa; Breddin, 1901: 153.

Perissoneura acutipennis Karsch, 1890: 192; Mac-Lachlan, 1891: 320.

Prasia acutipennis; Breddin, 1901: 153.

Lembeja acutipennis; Jacobi, 1903: 13; Distant, 1906: 184; Kirkaldy, 1907: 309; Schmidt, 1925: 43; Burns, 1957: 669; Metcalf, 1963: 429; de Jong, 1982: 175—177 (in synonymy of *Lembeja paradoxa*).

Lembeja brunneosa Distant, 1910: 418; Distant, 1913: 601; Ashton, 1914: 356; Burns, 1957: 669, 670 (equals *Lembeja australis* and *Prasia viticollis* (sic)); Metcalf, 1963: 430; Woodward, Evans and Eastop, 1970: 413; Moulds, 1975: 251—254, figs. 1—6; de Jong, 1982: 175—177 (in synonymy of *Lembeja paradoxa*).

Lembeja australis Ashton, 1912b: 77, pl. 7 fig. 3; Distant, 1913: 601 (in synonymy of *Lembeja brunneosa*); Metcalf, 1963: 430 ditto; de Jong, 1982: 175—177 ditto.

No new material has been studied since the redescription of *Lembeja paradoxa* (see de Jong, 1982). In addition to the redescription, I add here all relevant measurements and some additional figures in order to facilitate comparison with other species of the *fatillogua* group.

Head and pronotum together 0.97—1.14 × as long as meso- and metanotum together. Head

and thorax together in females 0.9—1.17 × as long as abdomen, in males very variable because of the telescoping abdomen, and therefore unreliable.

Eye in dorsal view 0.40—0.49 × as wide as width of vertex between eyes. Distance between lateral ocelli 0.52—1.05 × distance between lateral ocellus and eye. Length of head 1.23—1.35 × as long as width of vertex between eyes; width of head 1.81—1.98 × as wide as width of vertex between eyes.

Pronotum collar 2.13—2.53 × as wide as length of head, 1.42—1.68 × as wide as width of head.

Third ulnar area 1.19—1.65 × as long as 1st one; 4th ulnar area 0.95—1.10 × as long as radial area. Third apical area 0.89—1.16 × as long as 4th one. Fusion of Cu_2 and A_1 in wings at 71—91% from their origins.

Tymbal provided with 13—14 long ridges, alternating with an equal number of short intercalary ridges.

Ovipositor sheath 0.13—0.19 × as long as abdomen.

***Lembeja fruhstorferi* Distant, 1897**
(map 3)

Lembeja fruhstorferi Distant, 1897 (part.): 371; Jacobi, 1903: 13; Distant, 1906: 184; Kato, 1932: 189; de Jong, 1986: 141, 142.

Prasia fruhstorferi; Breddin, 1901: 27, 153.

The following reference was found to pertain to *L. distanti* de Jong, 1986: Distant, 1897: 371.

A very short description, made in comparison

with *L. fatiloqua*, is given here, as the species is only known from its female holotype

Description of the female.

Body dull-brown. Head and pronotum together $0.96 \times$ as long as meso- and metanotum together. Head and thorax together $0.92 \times$ as long as abdomen.

Head. — Brownish ochreous. Eye in dorsal view $0.56 \times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.87 \times$ distance between lateral ocellus and eye. Length of head $1.41 \times$ as long as width of vertex between eyes; width of head $2.12 \times$ as wide as width of vertex. Postclypeus and its transverse ridges uniform.

Thorax. — Irregularly brown and ochreous. Pronotum with some irregular patches. Pronotum collar with two small medial light ochreous patches. Pronotum collar $2.54 \times$ as wide as length of head, $1.7 \times$ as wide as width of head. Mesonotum with irregular patches in obconical areas.

Legs. — Same colour as underside of body. Basal spine on fore femora blunt and short.

Tegmina and wings. — Tegmina subhyaline, spotted along and in veins and in tegmen cells. Costa and veins light brownish. Extreme base light brownish. Transverse vein of 2nd ulnar area extending into 3rd one. Corial fold brown, in 4th ulnar area accompanied by a large brown patch. Third ulnar area $1.12 \times$ as long as 1st one; 4th ulnar area $0.84 \times$ as long as radial area. Third apical area $0.88 \times$ as long as 4th one. Wings hyaline, veins whitish tinged. Cu_2 and A_1 fused at 92% from their origins.

Operculum. — Very small. Small meracanthus broad at base, just a little longer than operculum.

Abdomen. — Brownish, underside a little paler. Hind margins of tergites 3—7 dull red. Ovipositor sheath $0.21 \times$ as long as abdomen.

Measurements of the holotype: body length 24.5 mm; width of pronotum collar: 8.0 mm; tegmen length: 35.4 mm.

Distribution. — South Sulawesi (map 3).

Material examined. — Indonesia, Sulawesi: "S. Celebes/Bua-Kraeng/5000" Febr. 1896/H. Fruhstorfer (print, black cadre), "*frubstorferi*/Dist." (handwritten), "Type" (print, round label, red edged), "Distant Coll./1911—383" (print) ♀ holotype of *Lembeja frubstorferi* (BMNH).

Remarks.

See *L. sanguinolenta*.

Lembeja sanguinolenta Distant, 1909

(figs. 38—41, map 3)

Lembeja sanguinolenta Distant, 1909: 394; de Jong, 1982: 182; de Jong, 1986: 141, 142.

The description is based upon the only known specimen of the species, the male holotype.

Description of the male.

Body for its greater part dull red. Head and body pilose. Head and pronotum together $0.91 \times$ as long as meso- and metanotum together. Head and thorax together $0.89 \times$ as long as abdomen. Greatest width of the body across the 2nd and 3rd abdominal segment.

Head. — Red, transverse ridges in the same colour as underside. Eye large, in dorsal view $0.68 \times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.92 \times$ distance ocellus and eye. Length of head $1.65 \times$ as long as width of vertex between eyes; width of head $2.35 \times$ as wide as width of vertex between eyes. Rostrum with only slightly darker apex reaching intermediate coxae.

Thorax. — Median part of pronotum, including central fascia and pronotum collar, red. Rest of pronotum light ochreous with some brown patches. Pronotum collar $2.68 \times$ as wide as length of head, $1.88 \times$ as wide as width of head. Fissures fairly deep. Obconical areas on mesonotum patchy.

Legs. — Same colour as thorax. Basal spine of fore femur blunt.

Tegmina and wings. — Tegmina subhyaline, on the whole spotted with red. Costa and veins red. Transverse vein of 2nd ulnar area extending into 3rd. Corial fold in 3rd ulnar area somewhat darker, in 4th one indicated by a large red patch. Third ulnar area $1.02 \times$ as long as 1st one; 4th ulnar area $0.84 \times$ as long as radial one. Third apical area $0.97 \times$ as long as 4th one. Wings subhyaline. Extreme base white with red. Fusion of Cu_2 and A_1 at 78% from their origins.

Operculum. — Hairy. Hardly reaching folded membrane. Large meracanthus broad at base, pointed apically.

Abdomen. — Reddish ochreous, tergite 3—7 with red hind edges. Tergite 1 with small latero-proximal flaps. Mirrors large.

Tymbals. — Provided with 20 long and 20 short intercalary ridges.

Genitalia. — Pygofer large. Flat lateral lobes medium-sized, not reaching beyond anal valves. Caudodorsal beak medium-sized, hardly pointed apically. Edge of pygofer just below each lateral

lobe somewhat protruding. Uncus narrow, a slight onset of a tube-like structure, just above claspers, discernable. Curved claspers relatively small. Apex of sturdy aedeagus with two long, more or less toothed, flaps.

Measurements of the holotype: body length: 24.6 mm; width of pronotum collar: 8.8 mm; tegmen length: 36.6 mm.

Distribution. — South Sulawesi (map 3).

Material examined. — Indonesia, Sulawesi: "S. Celebes/Bua-Kraeng/5000' Febr. 1896/H. Fruhstorfer" (print, black cadre), "*Lembeja/sanguinolenta*/Type Dist." (handwritten), "Type" (round label, red edged, print), "1909—21" (print) ♂ holotype of *Lembeja sanguinolenta* (BMNH).

Remarks.

L. fruhstorferi and *L. sanguinolenta* have about the same body-size, but some body ratios are very different.

Lembeja lieftincki n.sp.

(figs. 42—48, 78, 79; map 3)

The description is based upon two males and two females from South Sulawesi.

Description.

Body green to dark ochreous. Head and pronotum together $0.96\text{--}1.06\times$ as long as meso- and metanotum. Head and thorax together in males $0.78\text{--}0.79\times$, in females $0.84\text{--}0.95\times$ as long as abdomen.

Head. — Green to reddish-brown. Antennae usually darker coloured. Area between lateral ocelli sometimes darker coloured. Eye in dorsal view $0.55\text{--}0.58\times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.81\text{--}0.92\times$ distance between lateral ocellus and eye. Length of head $1.33\text{--}1.39\times$ as long as width of vertex between eyes; width of head $2.09\text{--}2.16\times$ as wide as width of vertex between eyes. Underside of head usually slightly darker.

Thorax. — Dark with black patches between fissures and between fissures and pronotum collar. Central fascia in females darker coloured than remaining part of pronotum. Pronotum collar $2.31\text{--}2.55\times$ as wide as length of head, $1.47\text{--}1.65\times$ as wide as width of head. Obconical areas distinctly recognizable. Cruciform elevation usually with median longitudinal dark stripe.

Legs. — Generally same colour as underside thorax but with some dark patches, especially basally and apically on tibiae and tarsi. Spines on fore femora dark.

Tegmina and wings. — Tegmina hyaline, spotted in and along veins in a regular pattern, and in tegmen cells, especially in apical area 8. Corial fold recognizable by heavy pigmentation, especially in 4th ulnar area. Basal area infuscated. Extreme base reddish. Venation green to red. Third ulnar area $0.97\text{--}1.0\times$ as long as 1st ulnar area; 4th ulnar area $1.0\text{--}1.08\times$ as long as radial area. Third apical area $0.85\text{--}0.96\times$ as long as 4th one. Wings hyaline. Fusion of the Cu_2 and A_1 veins at $72\text{--}84\%$ from their origins.

Male: Operculum. — Small. Meracanthus long and pointed.

Abdomen. — Sometimes darker coloured. Mirrors large. Folded membranes nearly continuous with underside of thorax. Tergite 1 laterally slightly depressed near the small lateroproximal flaps.

Tymbals. — Provided with 19 long ridges, alternating with an equal number of short intercalary ridges.

Genitalia. — Lateral lobes of pygofer sturdy. Lateral surface of pygofer with a short ridge-like structure running downwards from each lateral lobe. Caudodorsal beak relatively long, apically rounded. Claspers short and curved, hardly pointed. Median uncus part enlarged to a tube-like structure. Apex of aedeagus with two recurved, long flaps; dorsally provided with a long subapical incision.

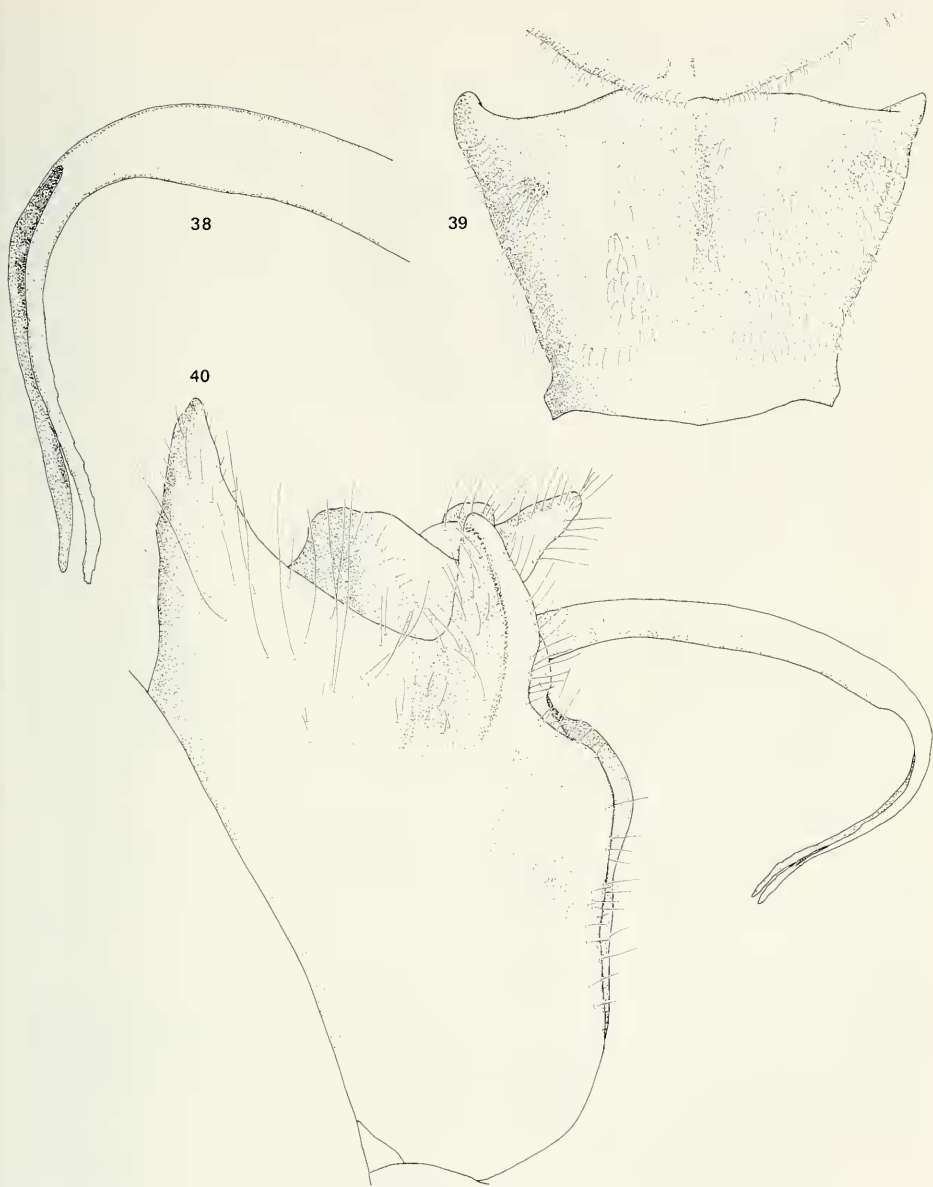
Female: Operculum. — Small, but relatively large compared to other species of the species-group.

Abdomen. — Provided with three dark-coloured, longitudinal fasciae as in *L. tincta*, but the two dark stripes on segment 9 narrower and not united in front of caudodorsal beak. Dark ovipositor sheath $0.40\text{--}0.41\times$ as long as abdomen.

Measurements of the types: body length ♂: 21.4—21.6 mm, ♀: 21.6—21.8 mm; width of pronotum collar ♂: 6.2—6.6 mm, ♀: 7.2 mm; tegmen length ♂: 27.5—28.0 mm, ♀: 29.0—30.0 mm.

Distribution. — South Sulawesi.

Types. — Indonesia, Sulawesi: Holotype: "S.W. Celebes, 1100 m/Mt. Lompobatang/area, Malino, 2./8—10.vi.1982/M. A. Lieftinck" ♂ holotype of *Lembeja lieftincki* (RMNH). Para-



Figs. 38—40. *Lembeja sanguinolenta*, holotype. 38, apex of aedeagus; 39, tergite 1, dorsal view; 40, pygofer, lateral view.



Fig. 41. *Lembeja sanguinolenta*, pygofer, ventrolateral view, holotype.

types: same data as holotype, 2 ♂ 1 ♀ (RMNH); Macassar (= Ujung Pandang), Rippon coll., 1 ♂ (NMWC).

Etymology. — The species is named after its collector, the late Dr Liefstinck, odonatologist, in recognition of his major contributions to the biogeography of Indonesia and the Pacific region.

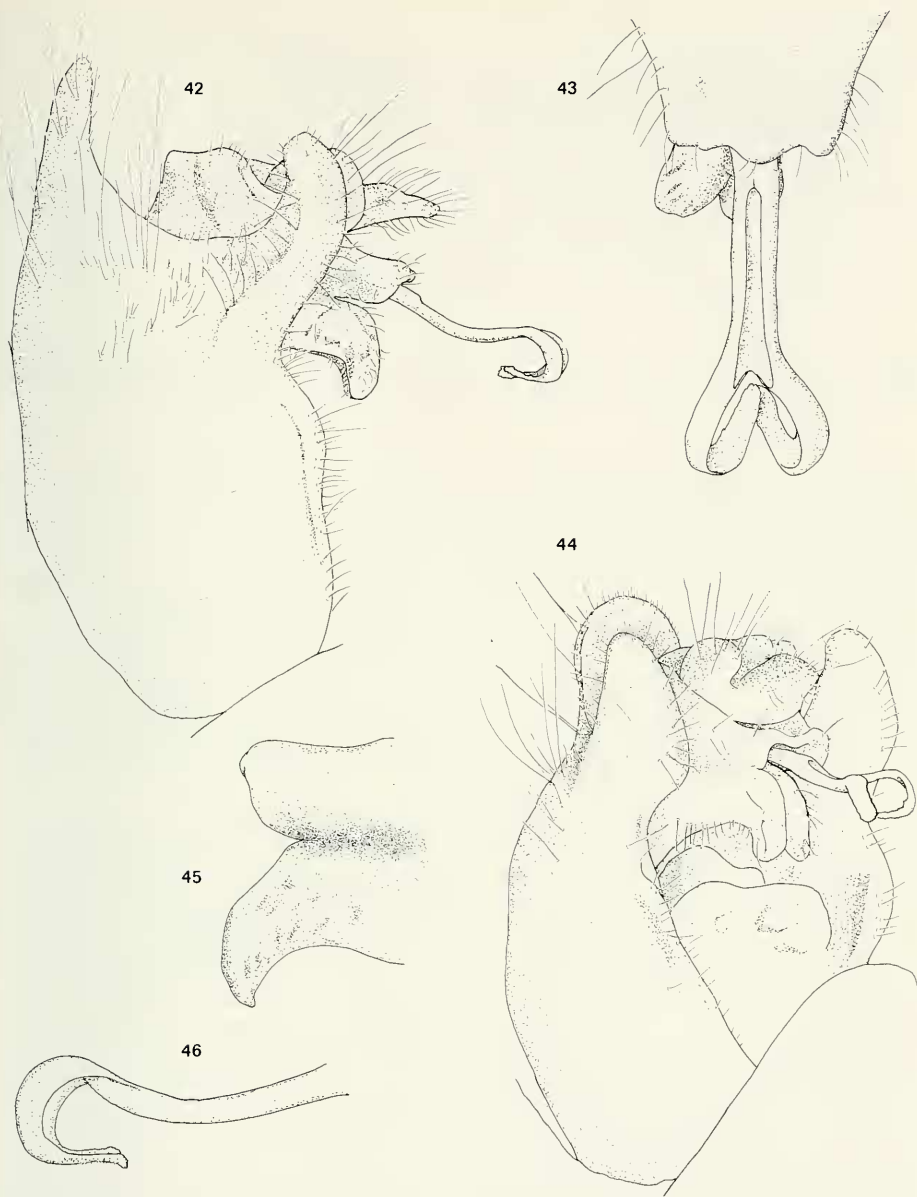
***Lembeja consanguinea* n.sp.**
(figs 49–56; map 3)

This species is described after a large series of specimens, collected by various participants to the "Project Wallace" expedition.

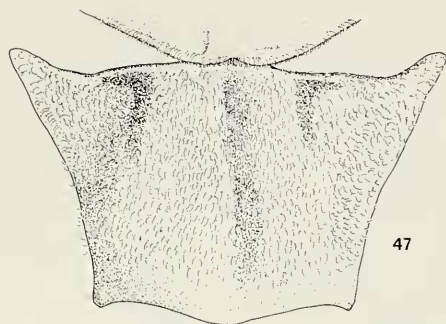
Description.

Body green. Tegmina greenish, tegmen areas usually faintly red mottled. Head and pronotum together $0.95\text{--}1.21\times$ as long as meso- and metanotum together. Head and thorax together in males $0.69\text{--}0.95\times$, in females $0.92\text{--}1.10\times$ as long as abdomen.

Head. — Eye in dorsal view $0.45\text{--}0.56\times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.71\text{--}1.04\times$ distance between lateral ocellus and eye. Length of head $1.26\text{--}1.56\times$ as long as width of vertex between eyes; width of head $1.84\text{--}2.12\times$ as wide as width of vertex between eyes. Transverse ridges in the



Figs. 42—46. *Lembeja lieftincki*, ♂ holotype. 42, pygofer, lateral view; 43, apex of aedeagus and median uncus part, dorsal view; 44, pygofer, ventrolateral view; 45, clasper and median uncus part, lateral view; 46, apex of aedeagus, lateral view.



47



48

Figs. 47—48. *Lembeja liefstinckii*; 47, ♂ holotype; 48, ♀, paratype. 47, tergite 1, dorsal view; 48, sternite 7, ventral view.

same colour as underside postclypeus. Rostrum with black apex reaching middle trochanter.

Thorax. — Pronotum collar $2.02\text{--}2.58\times$ as wide as length of head, $1.41\text{--}1.62\times$ as wide as width of head. Obconical areas of mesonotum hardly or not discernable.

Legs. — Same colour as underside body. Basal spine on fore femora pointed.

Tegmina and wings. — Tegmina subhyaline, green; tegmen areas usually faintly mottled with red. Venation green to yellowish. Transverse vein of 2nd ulnar area extending well into 3rd one. Corial fold clearly recognizable. Third ulnar area $0.88\text{--}1.04\times$ as long as 1st one; 4th ulnar area $0.82\text{--}1.05\times$ as long as radial area. Third apical area $0.88\text{--}1.02\times$ as long as 4th one. Wings hyaline. Fusion of Cu_2 and A_1 at 79—90% from their origins.

Male: Operculum. — Very small. Meracanthus fairly broad, long and pointed.

Abdomen. — Green, reddish near hind edges of tergites. Tergite 1 laterally sometimes brownish. Mirrors fairly large.

Tymbals. — Seventeen long ridges alternating with an equal number of short intercalary ridges.

Genitalia. — Pygofer very large. Lateral lobes flat, apically dark. Caudodorsal beak short and rounded. Lateral surfaces of pygofer with a ridge-like structure running downwards from each lateral lobe. Claspers short, curved apically, slightly pointed. Two huge, broadly rounded parallel shields elevating distally of the claspers, connected distally by a medial, protruding flattened lip, forming a tube-like structure. Aedeagus long and very slender, with two long, apically rounded

lobes; provided with unsclerotized dorsal aedeagal appendage.

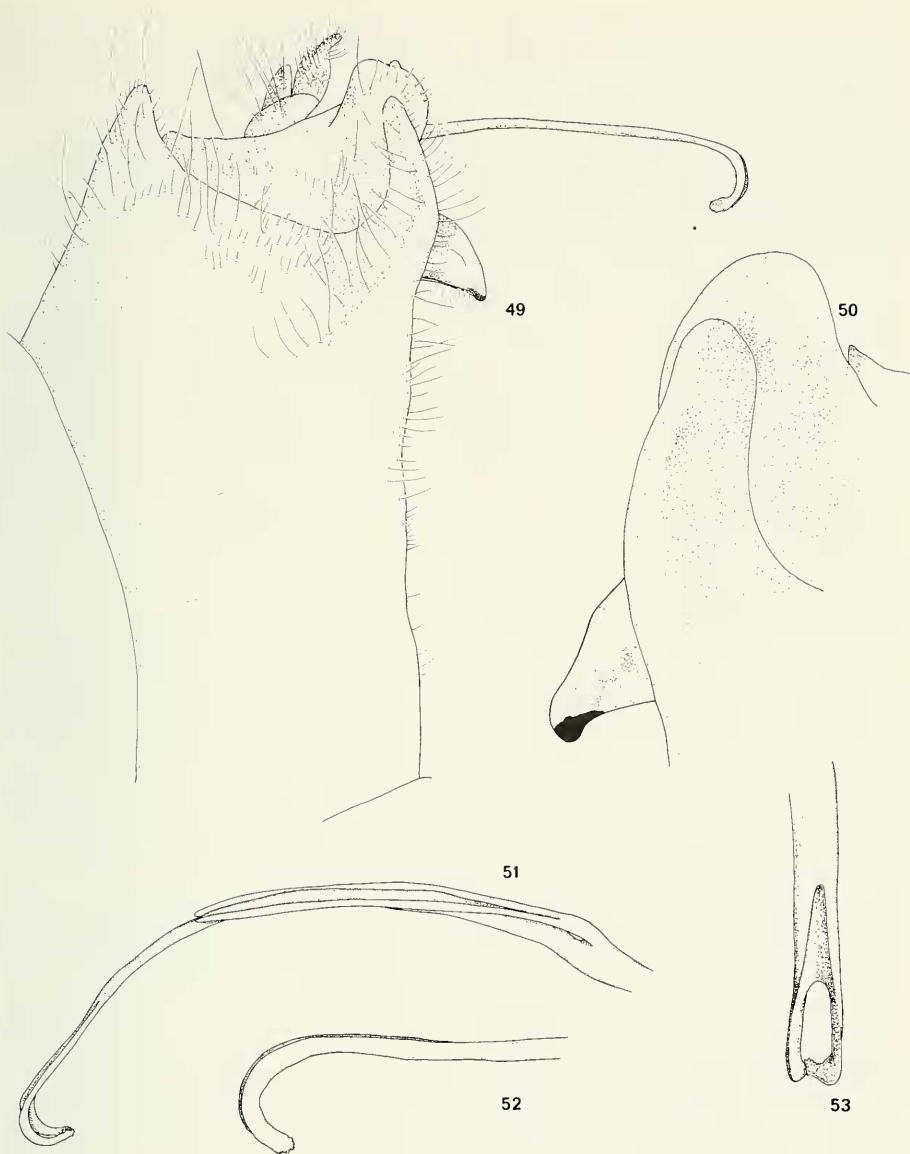
Female: Operculum. — Small. Meracanthus long and pointed.

Abdomen. — Green. Ovipositor sheath $0.23\text{--}0.29\times$ as long as abdomen.

Measurements of the types: body length ♂: $18.9\text{--}22.1$ mm, $\bar{x} = 20.9 \pm 0.8$ mm, ♀: $16.7\text{--}21.7$ mm, $\bar{x} = 19.2 \pm 1.1$ mm; width of pronotum collar ♂: $5.7\text{--}6.6$ mm, $\bar{x} = 6.1 \pm 0.2$ mm, ♀: $5.7\text{--}7.2$ mm, $\bar{x} = 6.4 \pm 0.4$ mm; tegmen length ♂: $24.6\text{--}28.4$ mm, $\bar{x} = 26.6 \pm 1.1$ mm, ♀: $25.0\text{--}29.4$ mm, $\bar{x} = 27.1 \pm 1.1$ mm.

Distribution. — North Sulawesi (map 3).

Types. — Indonesia, Sulawesi: Holotype: "stat. 3/Forest/margin" (print), "Toraut/Base Camp/29—30.i.1985/J. P. Duffels" (print), "Indonesia/Sulawesi Utara/Dumoga-Bone N.P./Project Wallace" (print) ♂ holotype of *Lembeja consanguinea* (ZMA). Paratypes: Base Camp Toraut, same labels as holotype, 1 ♂ 1 ♀ (MZB); same locality but: st. 7, lowland rainforest, MV light-trap, 1—2.ii.1985, J. P. Duffels & J. D. Holloway, 1 ♂ (ZMA); same locality but: st. 8, river bank, lowland rainforest, 2.ii.1985, J. P. Duffels, 1 ♂ (MZB); same locality but: st. 16, lowl. rainforest, light-trap site 1 + 2 understorey/canopy, 7—14.ii.1985, H. S. Barlow, 4 ♂ 10 ♀ (ZMA); same locality but: st. 24, lowl. rainforest, light-trap site 1, understorey, 17—26.ii.1985, H. S. Barlow, 4 ♂ 3 ♀ (MZB) 4 ♂ 2 ♀ (ZMA); same locality but: base camp, ii.1985, 1 ♀ (BMNH); same locality but: rothamsted light-trap site 1, 200 m, v.1985, H. Barlow, 4 ♀ (BMNH); same



Figs. 49—53. *Lembeja consanguinea*, ♂ paratypes Toraut. 49, pygofer, lateral view; 50, clasper and median uncus part, lateral view; 51, aedeagus with dorsal aedeagal appendage, laterodorsal view; 52, 53 apex of aedeagus, 52, lateral view, 53, dorsal view.

data as previous but: vi.1985, 3 ♂ 2 ♀ (BMNH); same locality but: 8—23.X.1985, J. B. Heppner, 1 ♂ 8 ♀ (FSC); same locality but: 19.x.1985, M. R. de Jong, 1 ♂ (ZMA); Edwards Camp 664 m, MV light-trap understorey/canopy, st. 27, 19.ii.1985, J. P. Duffels & J. D. Holloway, 1 ♂ 3 ♀ (ZMA); same locality but: st. 29, 24—25.ii.1985, 1 ♀ (ZMA); same locality but: iv.1985, J. H. Martin, 1 ♂ (BMNH); Goeroepahi, *Baeturia*, 6.ii.1917, W. Kaudern, 1 ♀ (RMNH); Hog's Back Camp 492 m, s.-side of ridge, st. 15, lowl. rainforest understorey/canopy, MV light-trap, 12—13.ii.1985, J. P. Duffels & J. D. Holloway, 1 ♂ (ZMA); Kosingsolan, P. P. A. headquarters, at light, René Dekker & Charlotte Vermeulen, 23.iii.1985, 1 ♀ (ZMA); Minahassa, *Prasia foliata* (Walk) Stål ♂?, det. MacGill., coll. D. MacGillavry, 1 ♂ (ZMA); Molosso Island, station 100, xi.1985, R. Bosman & J. v. Stalle, 2 ♀ (BIN); Page Camp 302 m, st. 9, lowl. rainforest, MV light-trap, 4—8.ii.1985, J. P. Duffels & J. D. Holloway, 2 ♂ (ZMA).

Etymology. — The name is derived from consanguinea (latin for "related"), for being closely related to *L. lieftincki*, by the typically shaped median uncus part.

Remarks.

I believe *L. consanguinea* and *L. lieftincki* to be very closely related. A strong synapomorphy might be found in the shape of the median uncus part.

The *Lembeja parvula* group

Head triangularly to obconically protruding in dorsal view. Antennal segment 1 long. Male operculum small, not covering tymbal cavities. Tegmina hyaline; a regular pattern of spots in veins, sometimes also in tegmen cells; Cu_2 and A_1 forming a small triangle at tegmen border. Wings with 5 apical areas; Cu_2 and A_1 fused. Abdomen in males weakly carinate. Tergites strongly folded laterally, forming a ridge on each side of the sternites. Abdomen in males in lateral view more or less triangular shaped. Tergite 1, with two short and pointed lateroproximal flaps, only slightly swollen and faintly dented near proximal border. Tymbal provided with 18—19 long ridges, alternating with an equal number of short intercalary ridges. Abdomen in females slender, dorsally carinate. Ovipositor sheath extending just beyond caudodorsal beak. Lateral lobes of pygofer short and fairly flat. Edge of pygofer between each lateral lobe and caudodorsal beak obliquely running hindwards (figs. 63,

67). Claspers relatively long, ventrally concave. Median uncus part narrow and compressed. Aedeagus short; sturdy apex with slightly incised dorsal projection.

Lembeja parvula n.sp. (figs. 61—67; map 3)

This small species is described after one male and one female specimen.

Description.

Body yellowish-green in male, brownish-ochreous in female. Head and pronotum together 1.0—1.15 × as long as meso- and metanotum together. Head and thorax in male 0.72 ×, in female 0.98 × as long as abdomen.

Head. — Green in male; brownish with paler underside in female. Antennae darker than remaining part of head. Eye in dorsal view 0.42—0.49 × as wide as width of vertex between eyes. Distance between lateral ocelli 0.58—0.71 × distance between lateral ocellus and eye. Length of head 1.25—1.36 × as long as width of vertex between eyes; width of head 1.84—1.97 × as wide as width of vertex between eyes. Rostrum with black apex reaching middle trochanter.

Thorax. — Pronotum in male unicoloured, in female with dark-coloured central fascia, and provided with dark patches, especially between fissures and pronotum collar. Pronotum collar 2.16—2.24 × as wide as length of head, 1.49—1.52 × as wide as width of head. Mesonotum with the same colour as pronotum in male, in female dark-brown, though laterally somewhat lighter, and provided with a median, brown stripe on cruciform elevation.

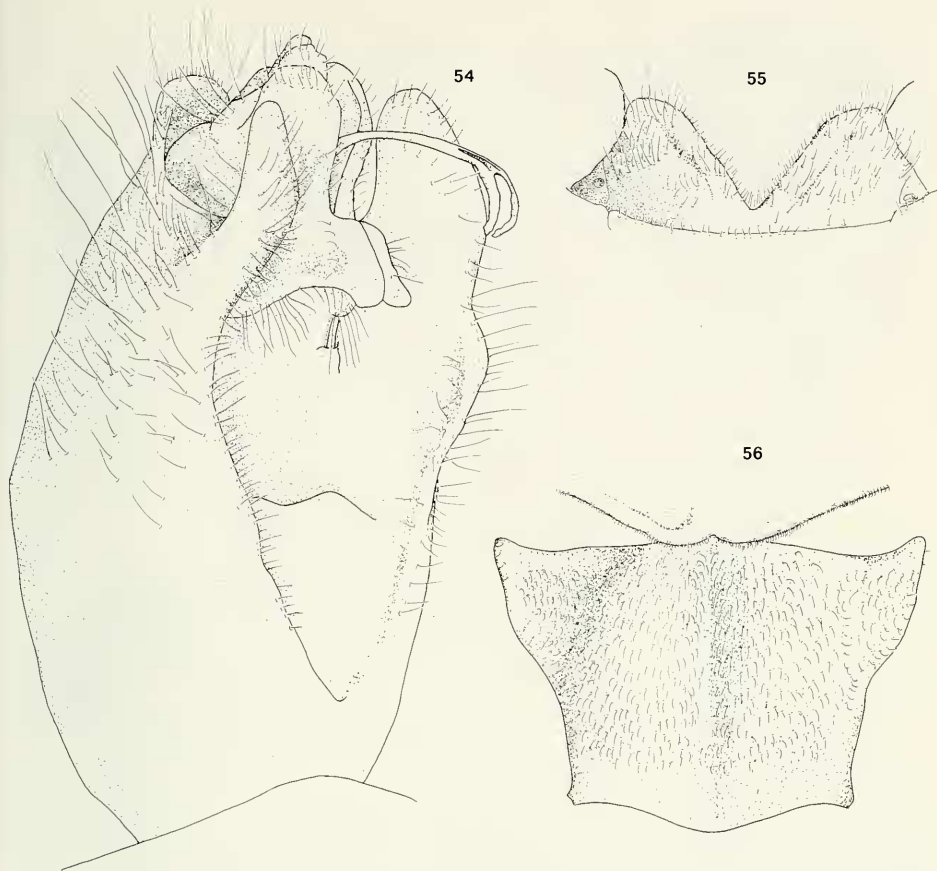
Legs. — Same colour as underside thorax in male; in female with dark-brown patches, basally and apically on femora, tibiae and tarsi. Armature of fore femora as in fig. 60.

Tegmina and wings. — Tegmina hyaline. Veins in apical half of tegmen in male with brown spots, venation yellowish-green. Tegmina in female with spotted veins, and with spots in tegmen cells in basal half of tegmen. Third ulnar area 0.96—1.12 × as long as 1st one; 4th ulnar area 0.8—0.81 × as long as radial area. Third apical area 0.81—0.86 × as long as 4th one. Wings hyaline. Fusion of Cu_2 and A_1 at 63—78% from their origins.

Male: Operculum. — Small. Meracanthus slender and pointed.

Abdomen. — Mirrors medium-sized.

Tymbal. — Provided with 19 long ridges alter-



Figs. 54—56. *Lembeja consanguinea*; 54, 56, ♂; 55, ♀ paratype Toraut. 54, pygofer, ventrolateral view, paratype Toraut; 55, sternite 7, ventral view; 56, tergite 1, dorsal view, holotype.

nating with an equal number of short intercalary ridges.

Genitalia. — Lateral lobes of pygofer fairly broad. Caudodorsal beak small. Claspers very long, apically only slightly recurved and weakly pointed. Median uncus part triangularly compressed. Dorsal projection of apex of aedeagus fairly long.

Female: Operculum. — Small, basal half dark coloured. Meracanthus short and pointed.

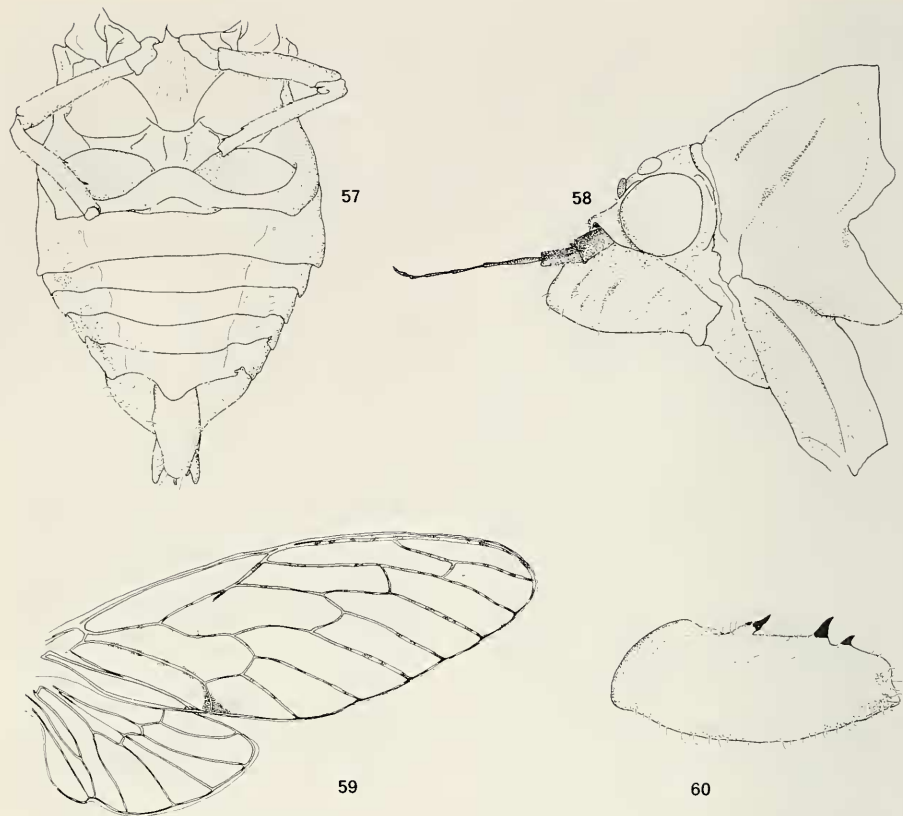
Abdomen. — Three longitudinal dark-brown fasciae, a dorsal, medial one, up to segment 8 and two lateral ones up to segment 7. Segment 9 with two broad laterodorsal, slightly darker fasciae, just not uniting in front of caudodorsal beak.

Caudodorsal beak with dark-brown apex. Dark ovipositor sheath $0.2 \times$ as long as abdomen.

Measurements of the types: body length ♂: 15.3 mm, ♀: 13.7 mm; width of pronotum collar ♂: 4.3 mm, ♀ 4.5 mm; tegmen length ♂: 20.3 mm, ♀: 19.6 mm.

Distribution. — South Sulawesi (map 3).

Types. — Indonesia, Sulawesi: Holotype; "Bantimoerang/552" (handwritten), "coll. A. Jacobi" (print), "Staatl. Museum für Tierkunde Dresden" (print) 1 ♂ holotype of *Lembeja parvula* (SMD). Paratype: same data as holotype but: *Lembeja* sp., 1 ♀ (SMD).



Figs. 57—60. The *L. parvula* group: 57, male abdomen, ventral view, *Lembeja wallacei*; 58, head and pronotum, lateral view, *L. parvula*; 59, right tegmen and wing, *L. wallacei*; 60, femur, lateral view, *L. parvula*.

Etymology. — The name is derived from *parvula* (latin for "small") as it is a small-sized species.

***Lembeja wallacei* n.sp.**
(figs. 68—73, 80, 81; map 3)

The species is described in comparison with *L. parvula*, after a series of specimens collected by participants to the "Project Wallace" expedition.

Description.

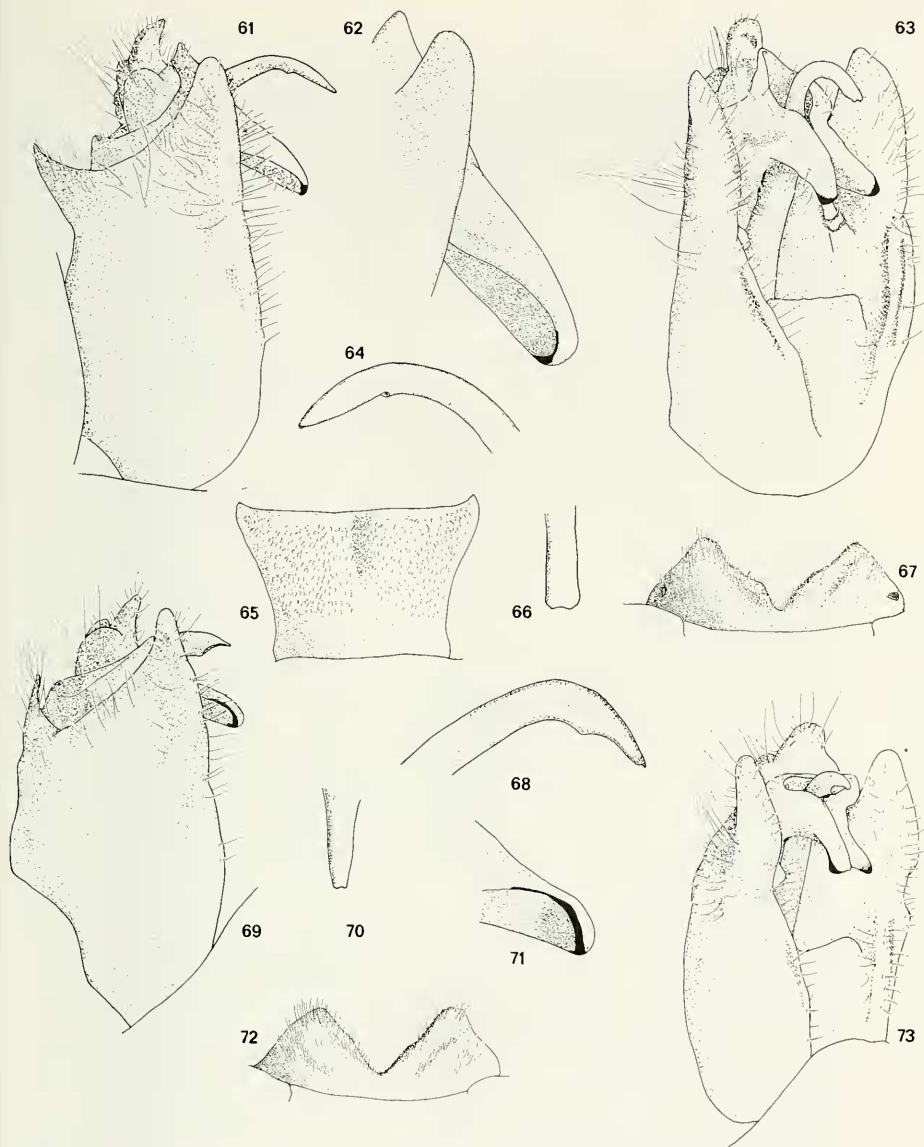
Body green in males, dark-brown in females. Head and pronotum together $1.08\text{--}1.24\times$ as long as meso- and metanotum together. Head and thorax together in males $0.75\text{--}0.93\times$, in

females $0.91\text{--}1.02\times$ as long as abdomen.

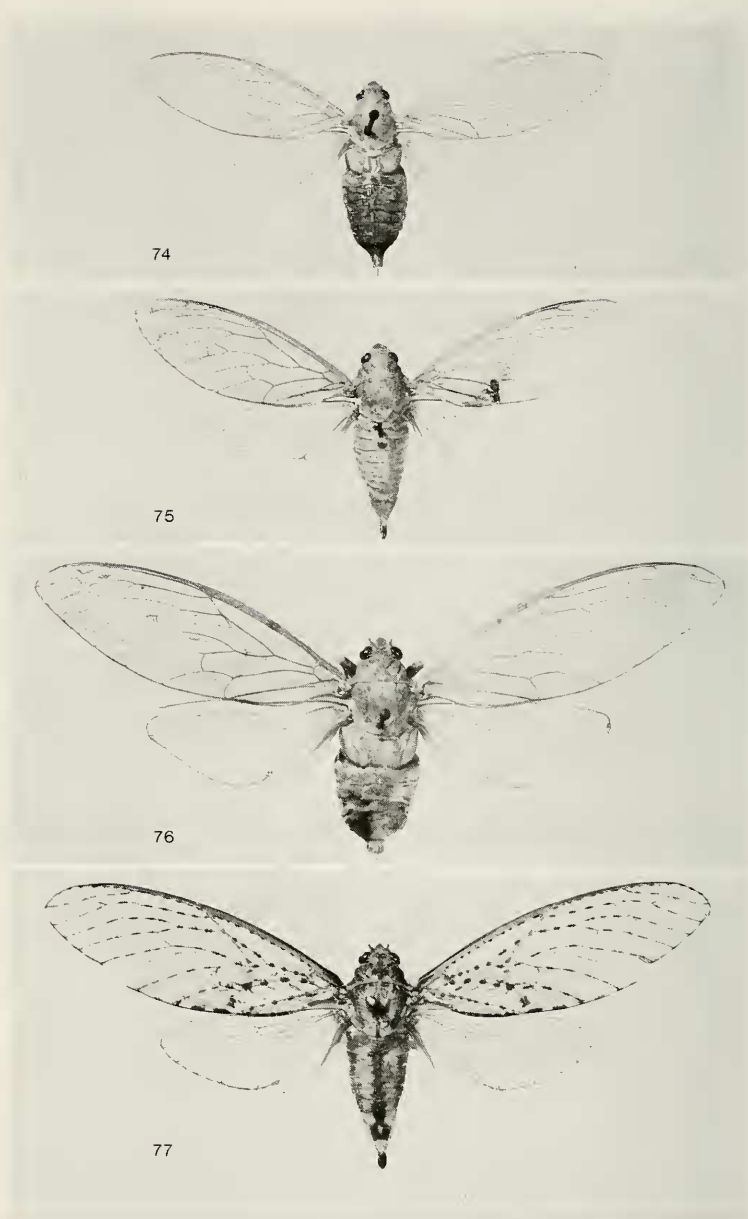
Head. — Uniformly green in males; in females dorsally irregularly covered with some light patches, postclypeus ventrally greenish. Antennae dark-brown. Eye in dorsal view $0.37\text{--}0.53\times$ as wide as width of vertex between eyes. Distance between lateral ocelli $0.76\text{--}1.0\times$ distance between lateral ocellus and eye. Length of head $1.23\text{--}1.38\times$ as long as width of vertex between eyes; width of head $1.75\text{--}2.05\times$ as wide as width of vertex between eyes. Rostrum as in *L. parvula*.

Thorax. — In males uniformly green, in females darker coloured than in *L. parvula*. Pronotum collar $2.03\text{--}2.25\times$ as wide as length of head, $1.35\text{--}1.58\times$ as wide as width of head.

Legs. — Same colour as underside thorax in



Figs. 61—73. 61—67, *Lembeja parvula*; 61—66, ♂ holotype; 67, ♀ paratype. 61, pygofer, lateral view; 62, clasper, lateral view; pygofer, ventrolateral view; 64, apex of aedeagus, lateral view; 65, tergite 1, dorsal view; 66, apex of aedeagus, dorsal view; 67, sternite 7, ventral view. 68—73, *Lembeja wallacei*; 68, 70, ♂ paratype Page Camp, 69, 71, 73, ♂ holotype; 72, ♀ paratype Edwards Camp. 68, apex of aedeagus, lateral view; 69, pygofer, ventrolateral view; 70, apex of aedeagus, dorsal view; 71, clasper, lateral view; 72, sternite 7, ventral view; 73, pygofer, lateral view.



Figs. 74—77. General facies. 74, *Lembeja fatiloqua* ♂, Calian; 75, *Lembeja fatiloqua* ♀, Z. del Sur; 76, *Lembeja tinctoria* ♂, Bua Kraeng; 77, *Lembeja tinctoria* ♀, Bua Kraeng.



78



79



80



81

Figs. 78—81. General facies. 78, *Lembeja lieftincki* ♂, paratype; 79, *Lembeja lieftincki* ♀, paratype; 80, *Lembeja wallacei* ♂, holotype; 81, *Lembeja wallacei* ♀, paratype Edwards Camp.

males. In females fore legs with brown coxa, trochanter and femur, middle and hind legs with brown coxae, patches on femora, tibiae and tarsi.

Tegmina and wings. — Tegmina hyaline. In males veins conspicuously spotted; tegmen cells in basal half of tegmen provided with spots; venation yellowish green. Coloration in females more prominent than in *L. parvula*. Third ulnar area $0.88-0.98 \times$ as long as 1st one; 4th ulnar area $0.85-0.93 \times$ as long as radial one. Third apical area $0.80-0.97 \times$ as long as 3rd one. Fusion of Cu_2 and A_1 in wings at 43–69% from their origins.

Male: Operculum. — As in *L. parvula*.

Abdomen. — As in *L. parvula*, but with faintly reddish hind edges of the tergites.

Tymbals. — Provided with 20 (sometimes 19) long ridges alternating with an equal number of short intercalary ridges.

Genitalia. — Dark lateral lobes of pygofer apically more slender than in *L. parvula*. Claspers somewhat more curved. Median uncus part flat. Apex of aedeagus more sturdy with short dorsal projection.

Female: Operculum. — Dark coloured. Shape as in *L. parvula*.

Abdomen. — Dark-brown. Segment 8 with a pale lateral spot on each side. Hind edges of tergites reddish. Dark ovipositor sheath $0.22-0.30 \times$ as long as abdomen.

Measurements of the types: body length ♂: 12.5–16.2 mm, $\bar{x} = 14.0 \pm 1.1$ mm, ♀: 11.8–13.6 mm, $\bar{x} = 12.5 \pm 0.5$ mm; width of pronotum collar ♂: 3.8–4.5 mm, $\bar{x} = 4.2 \pm 0.2$ mm, ♀: 3.8–4.3 mm, $\bar{x} = 4.1 \pm 0.1$ mm; tegmen length ♂: 18.2–20.1 mm, $\bar{x} = 19.2 \pm 0.6$ mm, ♀: 17.0–19.2 mm, $\bar{x} = 18.1 \pm 0.7$ mm.

Distribution. — North Sulawesi (map 3).

Types. — Indonesia, Sulawesi: Holotype: "Stat. 11/Lowland/rainforest" (print), "Toraut/bank of Tumpah R./(recreation area)/8.ii.1985/J. P. Duffels" (print), "Indonesia/Sulawesi Utara/Dumoga-Bone N.P./Project Wallace" (print) 1 ♂ holotype of *Lembeja wallacei* (ZMA). Paratypes: Base camp Toraut, same data as holotype, 1 ♂ (MZB); same locality but: st. 16, lowl. rainforest, light-trap site 1 + 2, understorey/canopy, 7–13.ii.1985, H. S. Barlow, 1 ♀ (ZMA); same locality but: lowl. rainforest, 200–300 m, 2 ♂ (BMNH); same locality but: Toraut, M. R. Wilson, vi.1985, 2 ♂ (BMNH); same locality but: malaise-trap Toraut forest, M. R. Wilson, vi.1985, 1 ♂ (BMNH); same locality but: 13.ii.1985, 1 ♂ (BMNH); Edwards Camp, 664 m,

st. 27, lowl. rainforest, MV light-trap, understorey/canopy, 20.ii.1985, J. P. Duffels & J. D. Holloway, 1 ♂ 1 ♀ (ZMA); same locality but: 22.v.1985, 1 ♀ (BMNH); same locality but: light-sheet, 23.vi.1985, M. R. Wilson, 1 ♀ (BMNH); Hog's Back Camp, 492 m, stat. 30A, lowl. rainforest, MV light-trap, canopy, 14.ii.1985, J. D. Holloway, 1 ♀ (MZB); Page Camp, 302 m, stat. 9, lowl. rainforest, MV light-trap, 4–8.ii.1985, J. P. Duffels & J. D. Holloway 4 ♂ 3 ♀ (ZMA).

Etymology. — The species is named after Alfred Russel Wallace, for numerous reasons.

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